THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

OCTOBER, 1895.

ESSAY ON ANÆSTHESIA.*

BY MR. T. R. MULCAHY.

(*Continued from page* 159.)

Ether.

THE action of ether differs very little from that of chloroform; it is weaker, hence it must be administered in a more concentrated form. To effect this, it is necessary to use a muzzle or to apply it to both nostrils. The proportion of ether to air should be about 70 per cent. of ether. Ether vapour irritates the air passages very much, and should therefore be mixed with some other anæsthetic. Ether also causes much more excitement than chloroform, and under it anæsthesia is less profound and passes off more rapidly. The heart vessels and respirations are less depressed, the heart continuing to beat after respiratory arrest.

These facts go to prove that ether is the safer anæsthetic; yet it has many disadvantages, not the least being its highly inflammable nature, its irritating action on the respiratory mucous membrane, and its requiring a much larger dose. It is, for these reasons, seldom employed alone.

Doses.—The quantity of ether required to produce anæsthesia, as with chloroform, varies according to the mode of administration, but is always larger than the amount of chloroform. Horses and cattle require from 5 ozs. to 10 ozs.

Contra-indicated.—Ether is contra-indicated in operations about the mouth in some animals, for air must gain access and destroy its effects. It also causes the secretion of a thick mucus, which may interfere with the operation. It is highly dangerous to use ether in the vicinity of lights.

Ether should not be used on patients with any irritation of the air-passages. In very old animals it should not be used, as the arteries are sometimes brittle and may be ruptured as a result of the increased pressure produced.

Post-mortem.—Death takes place by respiratory arrest. If the examination be made soon after death, the odour may be found in the spleen, liver, and kidneys. The blood is thick and dark, the lungs congested, and the bronchial tubes may contain mucus.

Nitrous Oxide is never used in veterinary practice, on account of its expense and the elaborate appliances required for its administration.

Anæsthetic Mixtures.—The chief mixtures used by veterinarians are the A.C.E. and Vienna mixtures. The former contains of alcohol one part, chloroform two, and ether five.

It is indicated in patients with lung affections, but in the larger animals it is too weak for ordinary use. It is used most in dog practice.

The Vienna mixture consists of chloroform, one part to three parts of ether. It is a safe mixture, and may be used where chloroform and ether alone are contra-indicated. The mixture most commonly used for the larger animals consists of equal parts of chloroform and ether. The objection to mixtures is that the ingredients do not evaporate in the proportion in which the fluids are mixed.

Local Anæsthesia.

By local anæsthesia is meant the rendering of a part insensible to pain, without disturbing general consciousness. It has the advantage of being attended with a minimum of risk, and of being practicable when the animal is standing. It is effected by paralysing the sensory nerves of the part acted upon. The chief agents are cold and cocaine. Ether is used to produce great cold.

Method by Ether.—Ether, when applied in a fine state of division, abstracts heat rapidly. If the application be continued for some time, the great cold produced causes paralysis of the cutaneous nerves. The deeper structures are not affected unless exposed to the freezing influence. The hair should be first removed, and the part well cleaned. The ether is then applied by means of an atomiser, until the part is rendered insensible to the point of the knife.

There are serious disadvantages connected with the local use of ether. Where the actual cautery is to be employed, its use is obviously impossible. Again, there is always some moisture about the tissues which is frozen, coating the knife, and obscuring the vessels and nerves.

If the freezing process be carried too far, a slough may form from frost-bite.

Because of these disadvantages, cocaine is to be preferred as a local anæsthetic.

Cocaine is now the chief and best of local anæsthetics. It is an alkaloid obtained from the leaves of the "Erythroxylon Coca," a plant indigenous to the Peruvian Andes, and held in great esteem by the native Indians, who chew the leaves and give it to their horses, upon which it has the power of greatly diminishing the desire for food, and also enables them to undergo a greater amount of labour.

The hydrochlorate of the drug is generally used on account of its solubility. Solutions are very prone to decompose. It is therefore advisable to prepare a fresh solution each time of using.

The solution is either injected subcutaneously or painted over the part. A 10 per cent. or 20 per cent. solution is commonly used hypodermically; about 10 minims of such a solution being sufficient to anæsthetise a horse's leg before the operation of neurotomy is performed.

In this operation it has the advantage (disadvantage by some) of rendering the nerve insensitive to stimuli.

A 4 per cent. solution is used in small operations on the eye, a part which never should be operated on without it.

Ten minutes or a quarter-of-an-hour should be allowed in order to give the drug time to act before operating.

In protracted operations, it may be necessary to administer a second injection.

In using the actual cautery over a large surface, the injection should be made at two or three different points, or what I consider better, viz., that the solution be well rubbed in for two or three minutes some little time before firing.

Some advise its use for such operations as docking. I must admit I am not quite so humane as those good people.

A 5 per cent. solution is used by means of an atomiser on the inside of the throat.

Cocaine is not devoid of dangerous properties, but in the larger animals, the quantity used to produce local anæsthesia is far too small to have any systemic effects.

It diminishes the secretion of saliva and is thus doubly useful in operations on the mouth. Small doses constrict the blood vessels, and thus diminish hæmorrhage.

In the dog a small dose acts as a moderate stimulant; larger doses produce excitement.

Poisonous doses procure convulsions and afterwards paralysis. The heart is depressed, and death may follow from its stoppage.

PASTEUR AND HIS WORK.

PROFESSOR PERCY FRANKLAND, F.R.S., Professor of Chemistry in Mason College, Birmingham, delivered the second evening discourse to the members of the British Association on Monday, the 16th September, taking as his subject the work of Pasteur and its various developments. The following is an abstract of the address:—It may be said without exaggeration that there is no scientific name which is so universally known, and in so many different connections, as that of Pasteur. The chemist, physicist, biologist, and medical man each view Louis Pasteur as the founder of some of the most important, novel, and fruitful departures in their several branches of knowledge, whilst in the worlds of industry and agriculture, his influence has also been deeply felt and gratefully acknowledged. The first subject of research taken up by Pasteur, at the early age of twenty-five, was of such an abstract character, that if his career had terminated with its completion, the general world would have never known his name, and yet the initiated few would have been able to recognise one of the shrewdest scientific observers of this or any age.

First Discoveries.

His strict mathematical and chemical training led Pasteur to be fascinated with the wonderful geometrical forms which are assumed in solids, in what is generally called the crystalline state; and the particular phenomenon which attracted his attention, was the existence of two tartaric acids apparently identical in chemical composition, in chemical properties, and in crystalline form, and, in fact, in all respects excepting alone that the solution of one had no effect on polarised light, whilst the solution of the other turned the plane of polarisation to the right. Submitting these crystals to the most searching scrutiny, Pasteur found that there were some minute faces on the crystals of the active tartrate which were absent on the crystals of the inactive tartrate, and such importance did he attribute to these little faces that he recognised that their presence relegated the substance possessing them to an entirely different class from that to which belonged the substance possessing them not. The crystals of the inactive tartaric acid which was destitute of these little surfaces, he found were symmetrical, whilst the crystals of the optically active tartaric acid, he found, were unsymmetrical, or dissymmetric, as he called it. His speculations, subsequently developed by Wislicenus, Le Bel, and van't Hoff, led

to the foundation of that most fascinating and fertile field of chemical science, now known as stereo chemistry, and prepared the way for some of the greatest achievements of modern chemistry, such as the artificial production of the natural sugars.

Researches in Fermentation.

Pasteur's genius was, however, not long to be retained in the exclusive service of abstract science. In the course of his experiments on the different kinds of tartaric acid, he was led to try the effect of submitting them to fermentation processes, and he found that the two oppositely active tartaric acids are physiologically utterly distinct, one of them being capable of undergoing fermentation by means of bacteria, whilst the other remained untouched. This striking phenomenon has been largely utilised by other investigators for the preparation of new optically active chemical compounds. Pasteur was thus drawn by accident as it were from the inanimate world of pure chemistry into the vortex of the world of life, and it was to the study of vital phenomena that practically the whole of his genius and energies were subsequently devoted. The frontier line which Pasteur crossed from the domain of chemistry into that of biology was at the time very ill-defined. The phenomena of fermentation which he had attacked were not generally regarded as vital phenomena at all, and it required years of patient labour before Pasteur was able to convince the scientific world of the truth of his statement that fermentation processes were the work of living microscopic organisms and that each fermentation process was the work of distinct organisms. Knowledge or appreciation of these classical researches has meant wealth to the brewer, the distiller, and the wine grower, and it is hardly an exaggeration to say that the brewer of to-day is able to stand the relentless taxation of the late Chancellor of the Exchequer as much through the labours of Pasteur and those who have succeeded him as through the unquenchable thirst of the British proletariat.

Studies in Bacterial Life.

Extensive as were Pasteur's researches in the domain of fermentation, there were processes which time did not permit him to investigate before he was hurried on into other fields of scientific interest or practical utility. His intuition, however, led him to recognise as a fermentation process the transformation known as nitrification, consisting in the conversion of ammonia into salts of nitric acid which takes

place on such an extensive scale in all the fertile soils of the earth. This process, from being regarded as a case of simple chemical oxidation, is now recognised as dependent upon the action of bacterial life; and the particular bacteria responsible for this action, after long eluding the search of the investigator, have during the last few years been isolated and described. In the course of these researches the astounding fact has been brought to light that in these nitritising bacteria we have living cells which are capable of flourishing and multiplying in the entire absence of organic matter. Even still more important revelations in vegetable physiology have resulted from the careful study of bacteria in recent years, for it has been shown that certain green plants obtain the nitrogen which they require for their nutrition from atmospheric nitrogen by means of certain bacteria which infest their roots. These bacteria produce nodular excrescences on the roots, but, when they are carefully excluded, these root-nodules do not make their appearance, and the assimilation of free nitrogen ceases also.

The Bacteria of Diseases.

Soon after he had commenced to study the bacteria of particular diseases he was impressed by the fact that often in the course of cultivation in artificial media outside the body their virulence became diminished to such an extent that they ceased to be fatal on inoculation into susceptible animals, but the most important discovery in this connexion was that the animals inoculated with such enfeebled or attenuated cultures were found to have become protected from the disease even when subsequently inoculated with the most virulent cultures of the same organism. Pasteur next proceeded to grapple with a disease affecting both man and animals, *i.e.*, hydrophobia. This problem was surrounded with special difficulties, over which, however, the genius of Pasteur triumphed, and the attenuated virus of hydrophobia was successfully prepared, and by several different methods.

PHOTOGRAPHY APPLIED TO VETERINARY SCIENCE.

BY "O."

Now that the processes of photography have been so much simplified by the introduction of dry plates and other appliances, it is rather strange that more veterinary surgeons do not avail themselves of the art-science, as it has been called, for the purpose of recording interesting cases. Written descriptions are, of course, of very great value, not

only for future reference by the recorder himself, but by his brother practitioners but, unfortunately, the faculty of verbal description is not always sufficiently developed to permit of the conveyance in so many words of all that is meant, and indeed in a number of cases words by themselves are inadequate. To those who experience a want of time for writing out lengthy cases, and to those who have the time but do not consider themselves to possess a command of suitable language, photography affords a ready and permanent means of placing before their fellows a true account of what they themselves have seen. An illustrated article is, of necessity, more valuable than a similar article not so embellished. We would, therefore, impress upon our readers the utility of photography in daily practice; even should the practitioner not desire to publish his cases—which is always to be deplored—still photographs will allow of a future critical comparison of similar conditions.

Photomicrography is perhaps a little too complicated for the average busy surgeon, yet even this branch is not over difficult, if one is willing and able to devote a little time and patience to it, and when combined with the manufacture of lantern-slides, it is of great assistance to anyone who wishes to point out to an andience the minute pathological changes in a tissue. It is an axiom that no two persons see the same thing in exactly the same way, in fact, it has been said that if a piece of common chalk be placed upon a table, and half-a-dozen people asked to describe what they see, the result will be half-a-dozen different descriptions; the same remark might, with equal—nay, with more—propriety be made in connection with microscopic objects. This fact renders drawings always more or less misleading, as the personal factor will creep into them. With photography the personal factor is, if not entirely removed, reduced to a minimum.

The pecuniary consideration need not, nowadays, deter anyone from investing in photographic apparatus, as it is really very slight, and by no means commensurate with the advantages which accrue from their use.

Let us take a lesson from the medical profession, in which photography is far more extensively used than in ours, with the result that the illustrated medical periodicals contain in almost every number rare and interesting conditions.

It should be borne in mind that photographs intended for reproduction should be on highly glazed paper, as matt-surface prints never come out very well by the processes usually employed for the purpose of illustration of periodicals, &c.

A NEW METHOD OF ILLUMINATION FOR PHOTOMICROGRAPHY.

BY JAMES HUNTER, F.R.C.S., F.R.S.E., ETC., PROFESSOR OF PHYSIOLOGY, NEW VETERINARY COLLEGE.

THE following short account has reference to a matter in which the ever-increasing class of readers interested in microscopical studies, will feel interested.

In these days of profuse and accurate illustration, microscopical details stand first, perhaps, in the necessity for absolute truthfulness of rendering; so much so, indeed, that it has come to be an understood thing that in all cases where new or especially controversial subjects are under consideration, drawings by hand and eye are no longer satisfactory and conclusive, since a photographic method of delineation, however imperfect technically, is more likely to be "near the truth."

To those, however, acquainted with photographic manipulation, even in the easier and more certain branches of portrait or landscape photography, it is unnecessary even to suggest the possibility of the "picture" being *unlike* the subject. Professional photographers, at least, are no sticklers for the dictum that the "camera and lens cannot lie"; they have ample experience of the contrary, for while photographic methods are certainly free from any possibility of untruthful rendering to palpably enable them to corroborate or favour the *views* of the artist or his instigator, practically as well as scientifically there are several adverse conditions in the appliances, mechanical, optical, and chemical, which conspire to make absolute "truth" in a photograph next to an impossibility.

Leaving out altogether the chemical difficulties, as beyond the scope of the present issue, it is not difficult to see how the character and direction of the *lighting* is an important factor in all branches of photography, no form of lighting being so trying and difficult to operate with as that where the subject is placed directly between the lens and a bright light beyond.

One has only to look at the very partial success of the photographer in securing a truthful, not to speak of artistic, picture of such subjects as the tracery of the architectural details, curtains, &c., of a window which is directly in front of the camera with a bright sky beyond, to be convinced of a discrepancy. Now it is just this unsatisfactory condition of things, avoided if possible by the ordinary photographer, which is the ever-present state of matters with the micro-

photographer (usually styled by a usage absurd enough, "photomicrographer.") With all but opaque objects (a very small class indeed), we are virtually faced with this difficulty in trying to photograph microscopic specimens—we must photograph them right against a bright transmitted light.

Up till some five years ago, to judge from the accounts of those who have made photomicrography their study and practice, it seems that the object, when not merely illuminated by the diffuse light of the sky, or of a piece of magnesium ribbon burned some distance beyond it, has been made the locus of an *image of some luminant*. Where this image is that of the solar disc, as projected by a heliostal and condenser, the method is free from many sources of error which are present when the image of an artificial light source is employed. In a second paper upon this subject, given in the present number of the *Journal of the Scottish Microscopical Society*, the author discusses the sources of these errors by experiment and by geometrical projection, as well as by the usual rigorous methods known to theoretical opticians.

It is there shown that when an image of a flame is projected upon an object on the stage by a condenser, even of the most perfect kind, there is of necessity, chiefly from the *thickness* of that image, a numerous set of radiant points of light both above and below the plane of the object, which can by no means whatever, however perfect the object-glass, be brought to the same focal plane as rays emanating from the plane of the object itself.

From this reason, what ought to be the shades, were the object its own radiant, are illuminated with false or penumbral light, and thus no true sharp definition between light and shade can be secured when a flame image is used for illumination.

Several other disadvantages of this latter method, as being too technical, we will not quote, but next to that already mentioned, the disturbance of contour definition from the presence of "interference bands" is shown to have also much to do with the hazy and ill-defined character of photomicrographs generally, even of the best ones, as compared with really good photographic work on other lines.

The essential departure from the older method of illumination is practically a very simple affair, but to judge from the practical results, a most important one. Without reference, however, to the several geometrical figures and algebraical

formulæ of the original paper, we cannot hope to succeed in explaining the theory, but a parallel case on a large scale appeals at once to the eye as a practical demonstration.

The optical lantern now so well known in class-rooms and scientific gatherings, having passed out of its magic juvenility, is a case bearing exactly on the present question.

Here there is, to quote the original paper, "in one focus of an objective a uniformly illuminated disc, an image in reality of the condenser as in my method, and on the same plane the image of the object, projected, if properly done, without any flare spots, such as trouble the photomicroscopist to get rid of; in the conjugate focus is found the slide . . . . enveloped in a smaller but equally well distributed disc of light, and by no means in an image of the luminant, as done by the photomicroscopist. Were the lanternist or photographic enlarger, who is a sort of photomicrographer in his way, to do this, the result would soon show that something had gone wrong. In strictness, perhaps, the photomicrographer does *not* focus an image of the flame on his slide, although directed by microscopical authors and optical catalogues (*vide* Zeiss' last), to do so, but finding the result unsatisfactory, he racks in or out his condenser until his fine flame-image having become an enlarged flare spot, with no definition, has at some favourable part been found suitable to give an appearance of comparative uniformity to the luminous field, which in focus it could not do."

At least two lenses, or systems of lenses, are needed for the new method; the one to produce an image of the luminant in the posterior focal plane of the other, and both so placed that, instead of an image of the flame being formed on the slide, there is there projected an image of the first lens.

This, which like the lens is round, is a bright luminous area of perfect uniformity all over, and no temporary or permanent difference of luminosity in different parts of the flame (which is always more or less the case) can change the disc of light otherwise than uniformly so over its entire area. This is an important advantage, and, indeed, for this alone, it is advocated by Dr. A. Köhler, in a paper quoted in the April number of the R. M. S. Journal for 1894.

In that paper there is no notice taken, and, of course, no explanation of its greater excellencies already alluded to, viz., its freedom from what the optical theorist would call "astigmatic penumbræ" and "interference bands."

As the Scottish Microscopical Society published no journal five years ago, this new method has not become generally

known, and Dr. Köhler may claim an independent introduction of its use.

The latter gentleman, like the author we quote, who seems to have been its inventor, expresses himself as astonished that any other method should ever have been used, so excellent are the results attainable.

Up to the highest powers usually employed in such work ($\frac{1}{16}$ in. oil immersion lenses) the results are most satisfactory even when the objectives in use are ordinary ones, showing how much depends on the lighting alone, as every photographer knows; with low powers—*i.e.*, 1 in. and $1\frac{1}{2}$ in. objectives—the results are equally superb, and show the nearest approach we have seen to the character of an excellent landscape photograph, in all the character of which the usual style of photomicrograph is so markedly deficient. Besides the expense incurred we believe, is next to nothing; there is no expensive achromatic condenser required, and an ordinary halfpenny candle seems to give quite sufficient light even when $\frac{1}{16}$ in. lenses are in use, with powers considerably over 1000 diameters.

The author uses an ordinary biconvex single lens next the light, but interposes a peculiar condenser of his own device between the flame image and the slide. This condenser, which we are unable to discuss here, consists, we understand, in its simplest form, of a common small coffee flask, with the neck removed, and a lens attached in its place, the curves being so adjusted that when filled with water, the system is perfectly aplanatic and permits still further of giving practically the advantage of an achromatic condenser, by tinting the water monochromatically. It is evident the same arrangement serves as a heat filter, and may also be made to serve as a colour screen when isochromatic plates are used.

We may conclude by drawing attention again to what practically at least seems the chief characteristic of this new method, viz., the projection upon the slide of a disc of light like a miniature lantern disc, and *not an image of the luminant* as in the older methods. Those wishing to follow out the theory of the method must consult the original paper in the current number of the *Journal of the Scottish Microscopical Society*. Should Dr. Köhler's adaptation be consulted in the *R. M. S. Journal* for April, 1894, it will be necessary, especially if construction be in view, to note that his figure has the rather serious error of showing the lenses with *twice* the radius of curvature proper to their distances.

RUPTURED STOMACH.

BY J. SPENCER SMITH, M.R.C.V.S., ASSISTANT TO H. THOMPSON, ESQ., M.R.C.V.S., ASPATRIA.

THINKING that the following case will be of interest to your readers, I venture to record it:—

On the evening of July 9th a message came requesting our immediate attendance at Bullgill Pit, the property of Messrs. The Crosby and Gilcrux Colliery Company, a mare being said to be ill with colic. On my arrival I found the subject to be an aged mare that had been working in the waggons all day. On enquiry I was informed that, after having its usual evening feed, it showed signs of colic, and an ordinary colic draught was given, but still the mare grew rapidly worse. It stood stretched out in the stall as if wanting to urinate, pawed incessantly with each fore-foot, particularly the near one, breathed heavily, while the vapour of perspiration rose from the body like steam, and the abdomen was frightfully distended with gas, but that in the course of an hour it seemed to get relief. On examination I found the pulse to be quick but feeble, respirations accelerated and mostly thoracic. Visible mucous membranes injected, abdomen slightly tympanitic, coldness of the legs and ears, and marks of patchy perspiration over the body.

A draught of spt. ammon. aromat., 1 oz.; tinct. zingiber, 1 oz.; chlorodyne, 1 oz.; and water, 1 pint, was administered, and the legs and body well wisped with straw and clothed.

I then left the mare for three-quarters of an hour, and on my return it seemed brighter; the pulse was firmer, warmth was restored to the body, and the breathing was normal.

Leaving instructions as to management, and a draught in case of the recurrence of pain, I returned home, and heard nothing more of the mare till July 15, when we were asked to examine it. Mr. Thompson found it to have all the symptoms of partial choking, as it frequently arched its neck with regurgitation up the gullet, accompanied by a sound as if affected with hiccough. The mare was off its feed, but on some green-growing corn being offered, it ate and swallowed easily.

Confident that he had something else than choking to deal with, Mr. Thompson ordered the mare to be sent to Aspatria, where a closer watch could be kept upon it.

It was admitted on July 16, afternoon, and though carefully watched, at intervals, until July 20, this peculiar symptom was only observed on July 17, after which date the appetite

gradually improved. It was discharged on July 20, being put to work in a few days; again nothing more was heard of it until about 10 p.m. on the night of August 3, when we were once more summoned to the pit, but on my arrival the mare was dead, having died about half-an-hour after it was first noticed to be ill. Knowing the previous history, and from the symptoms exhibited before death, I was sure that Ruptured Stomach had been the cause of death. This was verified on the morning of August 5, when a *post-mortem* examination was made, which revealed a rupture of the stomach about 18 inches long. More, there was a considerable quantity of fluid, of a gluey, gelatinous nature, seen adhering to the mucous and muscular coats of the ruptured edges, showing that the burst was not of recent occurrence, and that repair had been attempted. All the coats, but the serous, had evidently given way on the night of July 9, the fatal tear occurring on the night of death, August 3.

PURPURA HÆMORRHAGICA.

BY "VETERAN."

THE following history of a case of this disease presents features of interest that I have thought worthy of record in the JOURNAL. The subject was a heavy draught brown gelding, six years old, one of a large stud of horses, the property of a contractor.

It had been doing regular daily work until the day previous to the date on which my professional advice was requested, then being withdrawn from work merely on account of an abrasion of the skin on the near side of the neck, from a collar gall, to which fomentations only had been applied. The following morning, August 17th ult., the horsekeeper, on proceeding to give the morning feed, observed that during the night the horse had become unwell and swollen up in appearance. He at once, but with difficulty, removed him to a loose box. At 10 a.m., I found there were large œdematous swellings on the posterior aspect of both thighs; also one on the near side of the body. The head was pendulous, but not tumefied, and the visible mucous membranes showed no petechiæ. The pulse was dicrotonous, numbering 96 beats per minute; the temperature, much to my surprise, registering only 95° on a Fahrenheit thermometer. This was proved by repeated tests with other thermometers. Respiration was quickened, but not to any marked degree. The bowels were

constipated, the small quantity of fæces passed having a highly fœtid odour. The patient had no appetite for food, but drank water readily. I learned that for some weeks the patient seemed to have a slight cold, without cough, which did not affect its feeding or impair its capacity for work, and was, therefore, unheeded. Further inquiries and inspection made it clear to me that the stable management, in regard to ventilation and cleanliness, was very bad. Peat-moss, renewed at intervals of several weeks, was used as bedding, and the stable ventilation being badly regulated and imperfect, although, singularly enough, there was no sickness among the other fifty horses of the stud. Treatment was at once directed towards improving the sanitary surroundings, careful nursing, and the administration of soda hyposulph. in the drinking water. At 4 p.m. on the same date I found the patient's temperature had risen to 107°, the pulse firmer, but otherwise unaltered, the swellings increased, and one additional on the near shoulder and fore-arm, while faint petechiæ were visible on the Schneiderian membrane. Continued same treatment.

August 18th, 10 a.m.—Slight improvement, hyperpyrexia subsided, the temperature 105°. The pulse was unaltered, and the foul fæcal odour was greatly lessened. Potass. chlor. (a remedy that in many similar cases in my practice has been highly successful) was now prescribed in the usual doses, and continued until the morning of August 23rd, when, finding that there was no improvement, the tumefactions having extended along the floor of the abdomen, and involving all four limbs, the respiration more hurried, the pulse and temperature still rapid and high, in fact, that the purpuric symptoms generally were in no way abating. I resolved to try the iodine treatment, by intra-tracheal injections. I may mention also the immobility of the patient was so great that it had made no change in its position, from the time of the onset of the disease, doubtless due to serous infiltration into the intermuscular connective tissues, in addition to the subcutaneous effusions. Internal complications were feared, and altogether the case was of a serious character; fortunately the head and trachea had kept free from swelling, no difficulty being experienced in making an opening for the introduction of the hypodermic syringe, containing about 4 grains of iodine, the solution used being:—Iodine, 1 part; iodide of potassium, 2 parts; distilled water, 100 parts. Once daily, for a period of six days, was the trachea punctured and the iodine introduced, the beneficial results being little short of marvellous. The

exudative process seemed to be at once arrested, and the absorption of the large subcutaneous swellings was rapidly induced. A slow but uninterrupted recovery followed, good nursing and tonic treatment completing the cure. On September 10th, the date of my last visit, the patient was feeding fairly well, able for walking exercise, and although much emaciated the pulse and temperature were normal, the former, however, indicating a certain amount of debility. That the cause of illness was the entrance of a morbific principle, septic or toxic, into the blood, does not admit of any doubt in my mind. Purpura hæmorrhagica in this instance was the primary form, not being the sequel of any debilitating disease. The suddenness and severity of the attack, combined with the defective sanitary conditions, point to the probability that the impaired integrity of the blood of the patient was due to a poison of septic origin.

The channel of conveyance may have been the raw surface on the near side of the neck of the patient, the swellings at first appearing only on that side; but the mystery that still enshrouds the exact nature of the organism, all modern pathologists agree to be the causal agent of this disease of many synonyms, reduces our conclusions on this point to mere conjectures.

I consider peat-moss, as litter, to be a prolific source of disease, but only so in stables, in which its use is not carefully attended to. As a deodorizer and absorbent it is excellent, but therein lurks its hidden dangers. The urinary and fæcal fluids are retained for a great length of time, giving little or no evidence of their existence, all the time undergoing changes, chemical and organic, dangerous to animal life. I have traced many cases of sickness in horses, to the sodden state of the peat-moss litter; as a nidus for the deadly micro-organism, that is a fact beyond dispute.

I recommend my brother practitioners, who have not tried the iodine treatment per trachea in these cases, to do so. The germicidal and antiseptic properties of iodine act at once in the blood current of the subject operated on, while the same medicine when given *per ore*, is rendered unreliable by its tendency to form insoluble compounds. I am convinced that in the intra-tracheal injection of iodine in the above form, carefully performed, and with due regard to antiseptic precautions, we hold a potent remedy, not only for this, but also it may be for other allied diseases.

AN OUTBREAK OF EPIZOOTIC ABORTION IN CATTLE.*

BY VETERINARY-SURGEON DESMOND, WARRNAMBOOL, VICTORIA, AUSTRALIA.

As much attention is being drawn to the subject of epizootic abortion, the following results of investigation may be of interest to those studying the subject, and of service to country practitioners:

An outbreak occurred in this district on a large dairy farm, where upward of eighty dairy-cows were being milked, the milk supplying a cheese and butter factory. The farmer came to me with the doleful cry, "I am in dreadful trouble. I have lost £100 on my farm during the past few months." He went on to explain that forty cows had slipped their calves; and on further questioning I ascertained that the animals had aborted in all stages of gestation, from a few months to near full term, or, to repeat his own words, "They were from as big as my boot to full size."

I at once came to the conclusion that I would have to treat an outbreak of epizootic abortion, and a subsequent inspection of the cattle and farmyard confirmed me in this beyond a doubt.

I first proceeded to examine my client's stock and the surroundings of the farm. It was about an hour after the morning's milking when I arrived, and the cows which had just been milked were to be seen in an adjacent paddock, where green rye-grass was supplied to them morning and evening, this being distributed over the ground in small heaps. The cattle were of the class generally to be seen on dairy-farms in the district, and were of various ages and of all sizes. The cows that had aborted were easily picked out of the herd, as they showed want of condition, and their hair was rough and lustreless. While walking through the paddock in which the cattle were then grazing, my attention was attracted to several places where the earth had evidently been recently thrown up, and the farmer confirmed my suspicions by saying that it had been the custom to bury the aborted fœtuses where they were expelled. I advised him to destroy them by burning.

The dry cattle were next inspected, and the cows especially were found to be in splendid condition. But on entering a paddock in which the young cattle (all heifers) were grazing,

* Read at the June meeting of the Missouri Valley Veterinary Medical Association, by Dr. R. H. Harrison, D.V.S.

I was surprised to see a very poor bull. On closer examination I found him to be in wretched condition, and the brute had scarcely sufficient strength to move about. His hair was very rough, while the tuft of hair at the prepuce was matted and had a dark appearance, which made me suspicious that he had been the means of assisting to spread the disease. The owner informed me that he had paid £3 for this bull, and had had him for two years. I instructed him to destroy the animal at once. "That is the only one I have," protested my client, and in reply to my question whether he thought it right to have only one bull to one hundred cows, he said he considered it quite enough, though he had often seen six or seven cows in season around the bull while it was lying down. I informed him that thirty cows to one bull were considered by competent authorities to be a sufficient number.

An inspection of the milking-yard disclosed that it was in a deplorable state. It was more than two feet deep with liquid manure, and the corners, which were slightly lower than other portions of the yard, were covered with a green scum. The reason assigned for allowing the filth to accumulate in this manner was that the manure was required, and it was only when the yard became too boggy that all the stuff was removed, and a layer of ferns spread over it. The yard was in a very bad situation, and the arrangements were on a primitive plan. It was three chains from the dwelling-house, and was only three-quarters of a chain square, being altogether too small for the number of cattle (eighty) milked there twice a day. The yard sloped toward the bales, which were built under an old shed on one side, and so arranged that each cow after being milked, had to go through a small gate at the head of the bale, into a race which led into the paddock. This was a very bad arrangement for a dairy-yard, as it must frequently happen that one cow would block the race near the outlet, and so prevent the others from passing. The race, like the other surroundings, was in a frightful state, being one mass of liquid manure. The drainage (save the mark!) was also very defective, and adjacent to the yard, on the low side, there was a small pool of stagnant water, which had evidently percolated through the soil from the yard.

I informed my client that it was absolutely necessary for him to remove the yard to a better position. He at first demurred on account of the expense, but consented to effect the improvement when I told him I desired to be paid by results. I suggested that he should request his landlord to

pay a portion of the cost of removing the yard, but he seemed to think that there was very little prospect of such an appeal being successful. This landlord was a sheep-breeder, and if he could not get a tenant for the farm for dairying, he could stock it with sheep. (If he did so, he would probably soon learn to his cost that an outbreak of this kind is as serious in sheep-raising as it is in dairy-farming.) I selected a more suitable site on which the new yard was to be erected, and was fortunate in finding at a short distance a stony formation, which would afford natural drainage. In accordance with my suggestion, the shed to contain the bales was built of new timber, as the old timber could not well be disinfected. The floor of the shed was boarded with strong planks with tar joints, and this sloped into a plank drain, also having tar joints, which carried the excreta and disinfecting solution clear of the yard. The gates by which the cattle were let out after being milked, were made so as to open directly into the paddock.

I shall now proceed to describe the treatment I determined to put into force: an antiseptic method of treating the outbreak on a plan which I believe is original. For this purpose, a high stage was erected in the yard at the rear of the bales, and on this stage two casks, each of thirty gallons capacity, were mounted sufficiently high to allow the solution to gravitate with the force required to irrigate the genital organs of the cows—one cask containing a solution for this purpose, while the other was to sluice out the bales and drain. A long pipe, with suitable connections, was attached to the cask, and by this means the genital organs of the cows were irrigated with a medicated solution. After the milking, the same pipe was connected with the other cask, which contained a disinfecting solution, and by this means the shed and bales were disinfected. The following were the ingredients in the solution used for irrigating the genital organs of the cows:

Hydr. perch.	1¼ ounces.
Sodii chlorid.	3 pounds.
Rain-water	30 gallons.

To disinfect the shed and bales, I decided to use the following solutions alternately, and placed in cask No. 2:

Hydr. perch.	5 ounces.
Rain-water	30 gallons.

and

Ferri. sulph. comm.	3 pounds.
Rain-water	30 gallons.

I gave the following directions to my client: To watch all cows in calf, and immediately there were signs of parturition or abortion, to have them removed at once to a small paddock. If abortion took place, the fœtus and placenta were to be destroyed by fire. If the placenta did not come away naturally in ten to twelve hours, to remove it by mechanical means, and then irrigate the genital organs with about two gallons of solution from the No. 1 cask. This treatment to be adopted also with cows that had calved, so as to be on the safe side, and was to be done after all the other cows were milked and turned into pasture. I would have had separate bales and yards for newly-calved cows, and also for all new cases of abortion, but I adopted the above plan for the sake of economy.

After the new yards were built and the treatment had been followed for about five days I again visited the farm, and arrived before the morning milking had commenced. An inspection revealed a very altered state of affairs, which tended to show that the farmer had realised the importance of adopting the measures recommended for stamping out the disease. The bales and yard and surroundings were perfectly clean, and there was not the slightest odour from them. I inquired how the treatment had affected the cows, and the reply was, "The amount of matter that came away from the cows was surprising; it was yellow, and in some cases lumps like honeycomb also came away." "What length of time has elapsed since abortion took place in the cows from which there was so much discharge?" was my next question, and to this my client replied, "At all periods, from a few weeks to many months, but the cows the most discharge came from were those that I could get two feet of pipe into the genital organs."

While on this visit I found all the cows in *œstrum*, which I was informed came on about the third day the solution was used. The farmer also mentioned that in the first and second days he could only pass a foot of the pipe into the genital organs, but on the third day he could pass two feet, and was surprised to see such a mass of mucus come away. The fact that all the cows were coming in season was rather an advantage, as the os uteri would be dilated and the uterus could be irrigated.

I have continued the treatment described above, and, so far, the results are highly satisfactory.

One method of spreading the disease came under my notice on the occasion of my last visit. There was a bull

near the milking-yard, which, the farmer informed me, belonged to his neighbour, and it had jumped a three-railed fence to get among his cows. I advised him to inform his neighbour of the danger of the disease being carried to his cattle by the agency of the bull, and I believe the animal was at once removed.

In the course of conversation with some professional friends, I was asked, "What would you do if the owner of such a filthy farm as you have described refused to make the improvements?" My reply was that the farmer in this case kept the premises in that state from a mistaken idea of economy rather than from wilful neglect; but in the event of an owner refusing to comply with my instructions I would report the matter to the board of health, and if this did not bring about the desired result then I would inform his landlord and also the persons to whom he supplied the produce. In adopting such measures I would not be exceeding my duties as a veterinarian. If a fatal disease were to break out in that man's family, and the board of health found the premises to be in such an unsanitary condition, then I would be censured, and deservedly so, if it were found that I had previously examined the place and not furnished a report to the authorities.

The outbreak occurred in 1890, so I have had ample time to note the effects of my treatment. It is hardly needful to say that I have waited anxiously for the results, and that I have much pleasure in reporting that they were most gratifying to the owner of the dairy-farm and to myself. I have kept continuously in touch with the owner, and requested him to call on me when anything of note occurred in the course of the treatment. To sum up, the treatment had the desired effect. I think I can say this truthfully from a review of the circumstances. If the irrigation had not been resorted to, how would all the discharge that came away after the irrigation was used have been got rid of? Only four cows aborted at next calving, and the owner informs me that he could not irrigate these four satisfactorily, as he could not get all the pipe into the genital organ.

Since the outbreak was stamped out, Dr. Ross has procured a complete bacteriological laboratory, and has accepted me as his collaborator, and if I had to treat such an outbreak again I would make a bacteriological investigation with a view to isolating the micro-organism concerned in the production of the disease.

REPORT OF THE ARMY VETERINARY DEPARTMENT.

THE Annual Report on the equine strength of the army for the year ending March 31st, prepared by Veterinary-Colonel Lambert, has been received. During the year the health of the horses in Britain and Ireland was very satisfactory. The greatest mortality was in the Horse Artillery, and the lowest in the Household Cavalry. As to number of horses there is a small increase, the census on March last showing 13,192 troop horses, 1,915 chargers, and 178 mules, on the Home establishment. An examination of the returns under the head "Admissions to Treatment," attests the superior stamina of the mule for military purposes, as while 67·35 per cent. of the average strength of the horses received veterinary treatment, only 26·77 per cent. of the mules were professionally treated. The Infantry Transport sent the smallest percentage of cases, and the Army Service Corps the largest. The surgical cases numbered 3,698, not including limb affections, which latter number 2,245. Diseases of the chest and air passages numbered 835, a little over last year, but markedly smaller than in 1891 or 1892. Influenza and epizootic fever show a fair decrease; strangles a slight increase. Not a case of glanders or farcy has been reported since 1888. Nine years is the average age of horses now serving, the greater number of the horses being 6, 7, and 8 years old. The oldest horses, averaging 12 years 11 months, belong to the Infantry Transport, the youngest, averaging 8½ years to the Light and Household Cavalry; 13 years and 7 months is the average ages of the mules. Altogether the Report is very satisfactory, and testifies to the great efficiency of the Army Veterinary Department.

Editorial.

ON AFFILIATION.

IN an Editorial which I had occasion to write some months ago, in self-defence against the tactics employed by my rivals, I referred incidentally to a matter of great importance, a matter on which I have reflected long and carefully, and which, the longer I think of it, commends itself the more to my judgment, as I trust it will to the judgment of the readers of the JOURNAL.

In these modern days, when men are beginning to feel, as they never felt before, the importance of combination, when

joint stock companies are the order of the day in the mercantile world, when large railway companies are constantly forming closer and closer alliances with their neighbours and absorbing smaller lines, when even nations find it necessary to adopt exclusive legislation, it surely becomes learned and scientific bodies to consider the question of union. The Scottish Universities, seeing the folly and danger of competition—which would lead eventually to the degradation of underbidding—have adopted a protective policy in the way of common examinations for students entering their classes, and this is a step in the right direction. Now, I cannot see why the veterinary profession should not bestir itself and aim at amalgamation with other teaching bodies. This is a matter which concerns not merely men, like myself, who have devoted the best years of their lives to the training of the young practitioner, but to the whole veterinary world, as it ultimately touches on the vexed and difficult point of our social status. This point must be kept steadily in view all through the discussion which, I think, is certain to arise as soon as veterinary men and medical bodies awake to the importance of this grave and serious question. It is probable, indeed certain, that jealousies will be aroused and suspicions awakened, and everything done to obscure the true question, but if we keep the rocks and whirlpools carefully in view, we shall be better able to steer a correct and a safe course.

I have used the word Amalgamation, but perhaps it would be better and more politic to say Affiliation. What I should like to see, what I should consider the crowning glory of my life, would be the recognition of the veterinary colleges as branches of the medical profession by the Universities of the country. The very word Affiliation calls up a host of pleasant thoughts, which may guide us on our future course. We veterinary teachers have a high opinion of our aims and purposes, and of the work that we have accomplished and are accomplishing, but we should be quite glad to look reverently up to the great Universities of the country as our *almæ matres* and to treat them with the respect due to our seniors, in fact with true filial regard, although we have received practically no maternal care in our upbringing—provided that the Universities do their duty to us as their true-born daughters. I would carry out the metaphor a little further and urge on our kindly mothers that, as young maidens can do without much maternal solicitude during the years of childhood, but demand the most anxious care when they blossom into womanhood, so we veterinary schools, having survived all

our childish perils and sicknesses, and having grown hardy and strong on our plain fare, desire to place ourselves under the sheltering care of the Universities; we hope to do credit to our protectresses and to make their houses more attractive: what is more, we hope to be the means of bringing in a largely increased revenue to the maternal purse.

To talk in plain language, it seems to me only natural and fitting that veterinary science should form a part of a university curriculum. "The lower animals," said a wise man, "are our poor relations." This is a startling statement of a great truth, often overlooked, and it has an important bearing on the question I am discussing. What could be more fitting for a student of human anatomy or physiology than that, after listening to a series of brilliant lectures by Sir William Turner or Professor Rutherford, he should complete his studies and round off his knowledge of these vast tracts of medical science by studying the anatomy of the horse or the physiology of the ox? The one is the complement of the other; neither is complete without the other. Philologists tell us that a knowledge of Latin is an important help to the study of the modern Romance languages, and that conversely the modern languages, having retained in some cases peculiar formations—survivals of past ages—frequently explain difficulties in the parent tongue, in which these formations had become stunted and almost obliterated. The rule that holds good in the literary world holds good also in the scientific, and with even more force. I am convinced that a much wider horizon would be given to university life if a veterinary department were added to the medical. Doubts, justifiable in the narrower range of medical science based on the study of the human subject, would be cleared up by reference to the constitution of one or other of the "poor relations"; experiments in surgery or therapeutics might be tried on these latter before being transferred to the hospitals and the human patient, and much knowledge might be gained without moral or material risk to the operator. To the veterinary student the advantages accruing from contact with the *haute noblesse* of the medical world would be enormous. He would cease to be provincial, and become cosmopolitan. His degree, conferred on him by a university, and bearing at the same time the imprimatur of the Royal College of Veterinary Surgeons would be a more coveted distinction, and allow him to take rank amongst the medical practitioners of the country. Lastly, such an affiliation would effect a vast economy of forces. The same

classes might serve for veterinary and medical students alike, during the earlier part of their career at least, and the same laboratories and museums might supply the wants of both, especially if the veterinary treasures of our colleges were added to those of the universities. Examinations also—those bugbears of student life—might be simplified or reduced in number.

I trust that the suggestions which I am humbly putting forth may find favour with our university authorities, and with our own veterinary authorities at the same time. I trust some day to see a generous rivalry spring up amongst the universities, each striving to be the first to lend a friendly hand to our veterinary colleges, and all acknowledging the brave stand we have made, and the important part we have played in the great drama of life.

ON PROFESSIONAL ETIQUETTE.

In the course of conversation the other day, I asked a thoughtful friend what he considered to be the chief plagues of modern life. "The chief plagues of modern life," he said, "in my estimation, are waste-paper and advertising, especially the latter; formerly we could escape the advertiser if we wished, and tell the bookbinder to throw his proclamations into the waste-basket when binding our yearly volumes, but nowadays that is impossible: advertisements get so mixed up with the text that we can hardly tell which is the one and which is the other; they are paraded before our eyes everywhere and at all times, and at last they cause absolute nausea and disgust." My friend expressed himself perhaps with too much force, but at the same time I am bound to admit that advertising, when it creeps into professional life, as it threatens to do and indeed has begun to do, assumes a particularly repellent form. The case is different in commercial life, although even there advertising may become, so to speak, morbid; the public wishes to know certain facts, where it can obtain certain articles, how it can most readily be conveyed to certain places, when it can hear a favourite actor or preacher, and these demands are legitimately supplied by the advertisement columns of a newspaper. In the world of business also it is, commonly, merely the strongest that is wanted, and the strongest proclaims itself by its loud voice or—which is the same thing—by its long purse. "The survival of the fittest" may mean, and very often does mean

in mercantile life the survival of the strongest—the coarsest, if you like—but is it so in the professions? Is the leather-lung preacher the man whom we would consult in our hour of sorrow, or who goes deepest into our heart? Is the pompous, loud-talking, boastful physician the trusted and confidential friend of the family? I think not. I think that those qualities which are the essence of the best type of clergyman, doctor or lawyer, hinder such men from parading their virtues before their fellows. Such men may not always survive in this rude world, but then that is so much the worse for the world. We find, undoubtedly, the fittest and the highest type of professional man in the patient, humble investigator and searcher after truth, be it scientific or ethical truth, but these men are often, perhaps generally, self-forgetful, impatient of trickery, averse to worldly schemes of ambition and to all kinds of intrigue, and too often do they allow themselves to be utilised by cunning and selfish men for selfish purposes. Now, everything ought to be done to exclude the vulgar element in professional life, and to foster that which is tender and sensitive, provided always that it be at the same time healthy and pure. We may even take, in our own way, an example from our commercial brethren, and aim at the survival of the fittest, but we must remember that our fittest and their fittest are not always, or necessarily, the same. It may be the most robust with them; it may be the most delicate with us. In commercial life, loud shouting may be the best plan to follow; in professional life, there must be decorous silence, that the still, small voice may be allowed to make itself heard, because that voice is the voice of truth, and it is truth that we worship. Self-proclamation may do in business; self-repression must be the rule with us. The result will be the same, the method will be different.

As some of my readers may not have seen the very excellent papers on this subject, read at the recent meeting of the British Medical Association, I subjoin extracts which seem to me very well written and very appropriate.

Advertising.

Dr. G. W. POTTER read a paper on advertising. Having defined professional advertising as the public or private praising of a man in his professional capacity by himself or his agents for fame or gain, he observed that it is a vice from which the most highly placed members of the profession are by no means free, and that it is unreasonable to expect the man who takes 2s. fees to be ethically precise while the 2-guinea consultant advertises boldly and unashamed. No method of advertising is worked more energetically than the compilation of books. Can it be seriously maintained that the large number of medical works issued from the press are *bonâ fide* intended for the informa-

tion and instruction of medical men? Some time ago a practitioner persuaded one of his patients to purchase a book which he had written. The price was a guinea, the book was highly technical, and no injustice is done to the author by assuming that his object was to advertise himself and his merits to the patient and the patient's friends. Another device was the leaving of cards at private residences, and a third was in connection with newspaper paragraphs relative to the illness of prominent individuals. Some of these announcements were unobjectionable from the friend's point of view, but in too many instances the qualifications and the residence of the medical attendant were given with a fulness which left no doubt as to the ulterior motive. Another class of advertisers are the men who give certificates to vendors of foods and other commercial articles. These certificates are duly published in newspapers with many cunning additions. One gentleman in his widely advertised testimonial to the excellence of a certain food inserted the statement that it had been used by many of his influential patients, of whom he had attended seven hundred without losing one. Another form of medical advertising which is very common and on the increase is the writing of books with catchy titles, which make a great show (of course with the anthor's name), in the publishers' list given in the lay press. Needy practitioners in poor neighbourhoods seek to draw attention to themselves by methods of which the better class of tradesmen would be ashamed. There is a special demerit in professional advertising which must be plainly recognised both in order that no injustice may be done to our profession and in order that the public may be enlightened on the subject. The state of the case so far as it concerns the public is that the professional advertiser can by no means guarantee the results of treatment which are at least suggested in his advertisements. A commercial advertiser undertakes to deliver a certain article, and does so, whereas a medical man can only guarantee services—results he cannot guarantee. From the professional point of view, the advertiser takes an unfair advantage of his professional brother who does not advertise.

Intra-Professional Etiquette.

Mr. T. GARRETT HORDER (Cardiff) then introduced for debate the subject of Intra-professional Etiquette. After expressing his great satisfaction at the formation of a section of Ethics he pointed out that the loyal and faithful observance of the rules of intra-professional etiquette had an importance which could be scarcely overrated. It was absolutely necessary that medical men should show mutual consideration and sympathy, else they could hardly expect to escape unfair treatment on the part of the public. Moreover, if patients were made acquainted with the general rules which govern our professional life, they would be more likely to avoid courses which tend to place medical men in unpleasant positions. The subject might be conveniently classified under three headings: (1) The etiquette of private practice; (2) that of club appointments; and (3) that of consultation. In the first place, there is no question as to the right of patients to change their medical attendants. In cases of incurable disease there is a natural anxiety on the part of sufferers to try every means which promises relief; they go from one practitioner to another, and it is from such patients that quacks extract large sums, for these gentlemen are troubled by no doubts or misgivings—their remedies are infallible and their charges are liberal. Before accepting a patient who has already been under the charge of a brother practitioner, we should make sure that the previous attendant has been informed of the intended change, and it is a good plan ourselves to communicate with him directly. When consulted by patients who are also members of a club, we should do nothing to embitter the relations between a club medical officer and his patients. Club practice is difficult to carry on, and becomes much more

so when it is known that other medical men are willing to accept the office. With respect to the etiquette of consultations, it must be remembered that the relations between the public and specialists have undergone a great change. Formerly the consultant communicated the result of his examination to the family practitioner, but patients now consult specialists without making their intention known to their ordinary attendant. As a general rule, however, the consultant should enter into communication with the family practitioner. For meeting the cases in which the consultant has contrived altogether to supplant the previous attendant it is most desirable that a court of appeal should be instituted by which ethical questions might be examined and decided.

Mr. LEE (Cork) said that some time ago the medical officers of all the medical clubs in Cork resigned their appointments in consequence of abuses whereby wealthy persons were permitted to become members of clubs and obtain medical attendance for seven-and-sixpence a year. The appointments are now held by four imported medical men, whom the profession in Cork do not meet in consultation, and some anxiety is felt by the latter as to their proper course in the event of their attendance being requested on account of dangerous illness (such as post-partum hæmorrhages) among the patients of the club practitioners.

Dr. PEARSE said that the same question had arisen at Portsmouth, where there is an enormous medical club connected with the Dockyard. He thought that no such consultations should be held.

Mr. H. HEMMING urged that in any course that might be adopted due care should be taken that the lives of patients were not endangered.

Drs. HARRIS, WOODS, and MCNEE also took part in the discussion.

In the columns of this issue of the JOURNAL will be found the proceedings of the Eastern Counties Veterinary Medical Association at their meeting, held on August 22nd ult. Much to my surprise, which will doubtless be shared in by most of the members of the profession, those present at the meeting decided that the Royal College of Veterinary Surgeons should be asked to investigate the subject of tuberculosis in cattle. This, in the face of the exhaustive work done by the members of the Royal Commission regarding that disease, combined with the intimate knowledge of it, in all its aspects, we have derived from the admirable and searching investigations on the Continent and in America, seems to be, to say the least, an unnecessary move. I am of opinion, without committing myself to an entire approval of the suggestions in the circular, on which the discussion was based, that the Government should bestow immediate attention to the suppression of tuberculosis in cattle.

All the Veterinary Colleges commence their Winter Session this week, and it is well to note that all have decided to revert to the old system, to have a Winter and a Summer Session.

I regret extremely that it is impossible for me to insert the plates in connection with the valuable paper by Professor Macqueen.

Had I known that the National Veterinary Association were determined not to allow any but their own members to gain knowledge from their brother practitioners, I certainly should not have inserted any portion of any of the papers read at their last meeting, but I only became fully aware of the fact when it was too late, and the matter was in print. It seems to me a most narrow-minded policy, and one which I feel sure will not add to the popularity and *éclat* of that body.

Proceedings of Veterinary Medical Societies, etc.

BORDER COUNTIES VETERINARY MEDICAL SOCIETY.

A GENERAL meeting was held at the Bush Hotel, Carlisle, on Friday, 19th July. Mr. J. C. Soulsby, president, occupied the chair, and there were also present: Professor Bradley, of the New Veterinary College, Edinburgh, Messrs. H. Thompson, Aspatria; Donald, Wigton; Pears and Park, Penrith; and J. W. Hewson, hon. sec.

Some discussion took place as to the issue of a circular by the Secretary for a special meeting of the Society to take steps to forward the candidature of Mr. McIntosh, of Dumfries, for election to the Council.

Mr. DONALD complained that no time was specified on the circular, and when he attended at the usual hour he could not find that there was any meeting.

The SECRETARY said as a matter of fact no meeting was held. The meeting was arranged at the request of several members. He afterwards heard that Mr. McIntosh did not wish to become a candidate.

Mr. DONALD: He staunchly refused.

Mr. BELL (Carlisle) wrote that the ecraseur belonging to the Society required repairing, and the tooth instrument case was broken in transit from Carlisle to Mr. Soulsby, of Whitehaven. There was a rule that damage to instruments should be repaired at the expense of the person borrowing them.

The PRESIDENT said the tooth instrument case was broken before it went to his father.

Mr. DONALD said Mr. Soulsby, of Whitehaven, was not a member of the Society, and was not entitled to use the instruments.

As a result of discussion, it was agreed that the instruments be procured for the next meeting, and if the broken case was not strong enough for its purpose, as was alleged, the Society should provide a better one.

The SECRETARY nominated for membership of the Society Mr. Hewitson, Brampton, and Mr. Martin, Appleby.

Pathogenic Bacteria—Discussion.

Discussion was now resumed on the interesting demonstration of Pathogenic Bacteria given by Professor Bradley at last meeting.

Mr. THOMPSON said he did not altogether go in with the germ theory, but he supposed he would have to, to a certain extent. Some people said he did not read his Bible, but he said he did. In the 13th chapter of St. Matthew, and part of the third verse and five following verses, there was something

said about a sower going forth to sow, and some of the seed fell by the wayside and the birds picked it up; some fell amongst thorns and was choked, some fell among stones and was scorched by the sun, and some fell upon good ground and brought forth some a hundred and some sixty fold. He asked them not to run away with the idea that he had selected a text and was going to preach a sermon, but he thought this very applicable as showing that seed required a good bed in the ground before it would bring forth its increase. There were four points in that text. In three different places where the seed fell the ground proved unsuitable, but on the good ground it grew; and that he thought was applicable to the case of the microbe and the bacillus—it must have suitable ground. He did not doubt the accuracy of the experts who with the aid of the microscope had found out the different bacilli or microbes or germs which caused different specific diseases. Their experiments were carried out on suitable ground and surroundings. Experts told them that the spores of specific bacilli or microbes could lie in a dry condition for a considerable time, like "wheat or some other grain" and retain their vitality, waiting until they found a suitable situation for their development. If these spores were continually in our midst, in the water we drink, the air we breathe, and the food we take, and if they were so infectious, it was remarkable that the whole human family and all the beasts of the earth were not destroyed by these little microbes. It appeared to be due to the simple reason that in three-fourths of the cases they did not find suitable ground. With reference to the vitality of these spores, there had been a very good illustration in Cumberland this year. Many farmers had sown their turnips where the ground was in good tilth, but there was no germination because moisture was wanted. Instead of the seed springing in the course of six or eight days, it had not germinated in six or eight weeks, and the seed was wasted. The first slide Professor Bradley showed them was the microbes of pus found in an external wound. That was possibly quite correct, but what about the pus that had not an external opening, such as an encysted abscess in the external parts of the body? It would be another sort of microbe, he supposed. With reference to tetanus, said to be caused by the drumstick bacilli, he had read in Sims Woodhead's bacteriology that this bacillus was found in soil, and particularly in garden mould. That was rather astonishing, because it was a common practice with him to dust with dry soil a good healthy wound—it was a very good absorbent, and the wound rapidly healed. He could not remember having a case of tetanus supervening on the application of dust to a wound that was healing up nicely. It was also recorded in cases of tetanus that the bacilli were not found in the secretions or in the blood, but in the wound or the neighbourhood of it. He remembered a case of tetanus in which the victim was a big black horse belonging to the late Mr. Blackstock, of Hayton Castle. In pulling a heavy load it stepped on a nail, which went through the sole and split the coffin bone. This was about 5.30 or six o'clock at night, and the horse died of acute lockjaw before midnight, in the greatest agony. It was a smart bacillus that caused that tetanus. With reference to tuberculosis, glanders, actinomycosis, and other specific diseases, he thought there were sufficient diagnostic symptoms without calling in the aid of the microscope, but in anthrax there was much difference of opinion. The anthrax bacillus was among the first that was found, but he was a bit sceptical as to whether the rod was the cause of the disease or an affect of the disease. Experts told them that the anthrax bacillus was a great lover of oxygen. In the case of a beast at the point of death from anthrax the bacilli were not to be discovered if the blood was examined. What then was the disease prior to the invasion of the bacilli? If the bacilli loved oxygen, then in the case of an animal breathing 70 or 80 times a minutes with its lungs in a congested state, the blood could

not be properly oxydised, then where was the bacillus to get the oxygen from? They were told that spores would not develop in the body. They must be outside the body, and they also loved oxygen, and what was more they must have a temperature of not less than 64° and up to 108° and 110°. In winter time he would like to know when there was a temperature of 64, with frost and snow on the ground? In summer time sunlight was said to have a depressing effect on them and assisted in destroying them. He did not see why they should be so infectious or contagious. He did believe in anthrax blood being very inoculative, from what he had seen himself, but he could not believe it was so infectious or contagious as people made believe, as he knew of many solitary cases having occurred. In these cases he would like to know why one professional man should take it upon himself to say it was anthrax when there was so much difference of opinion amongst experts. Professor McFadyean said in his Journal that many cases sent up to him were not anthrax at all. Sunlight destroyed them, yet it took 64 degrees of heat to germinate the spores, and he (Mr. Thompson) could not see how it arose. If they were in a dry form and floating about certainly peculiarities of the soil, food, or water, or temperature might act on the beast, and bring it into that condition where the spores must develop and grow; but that was the only way that he could see. It came to the old text again that the ground must be suitable; and they must inquire what it was that put the body into that condition which gave these specific organisms power to assert themselves. The late Professor Dick used to say "Find out the cause—remove the cause and the effects will cease." That was a grand old story. If these spores of typhoid fever, scarlet fever, measles, small pox, tuberculosis, glanders, anthrax, etc., were all floating about continually in our midst, it was funny that these organisms should select various constitutions to develop their different species. If these bacilli were the cause of disease, why did not the experts find some material to destroy them, and not let them take effect? He thought they were not the cause, they were more the effect of some altered conditions of the body.

Mr. PEARS was of opinion that there was a great deal to be discovered yet. One thing he was "capped" with, namely, when the blood of an animal was sent for examination an hour or two after death from anthrax, experts were unable to say the cause of death, and said the specimens had been sent too late. It was very unsatisfactory, because in cases which he knew to be anthrax the Professors had been unable to tell him anything about it.

The PRESIDENT said that when Professor Bradley informed him that tetanus was due to a microbe generally found in soils he could hardly understand it, because a number of wounds were kept dirty and they would often find that horses out at grass had wounds on them, and they must be expected to suffer from tetanus if that was the case. He had come to the conclusion that tetanus was due to the surrounding atmosphere, and the stable perhaps had something to do with it. They might go two or three years without having a case, and then there might be half-a-dozen within a month. To his mind the climate had something to do with it. Perhaps it was that the animal got into a certain habit of body and the microbes were able to lodge there and develop. Anthrax was a very vexed question, for one man would say a certain case was anthrax, and another would say it was not. How were they to get to the bottom of it? With all their microscopes and testing and such like, experts were not able to say with certainty that a disease was due to a certain germ. Science had not advanced so far.

Mr. DONALD said tetanus, anthrax and tubercle seemed to interest them as practitioners the most. Like Mr. Thompson, he was doubtful about tetanus being due to the particular bacillus which scientists told us it was due to. It was common from wounds especially, but he had never seen more tetanus in

the case of animals and consequently liable to contamination by soil in the fields than in the case of those treated antiseptically under the veterinary surgeon. It was a practical fact known to every practitioner that punctured wounds and wounds resulting from ligature were decidedly the most liable to be followed by tetanus, and viewed in the light of present day pathology he failed to see why it should be so. Another point on which information was wanted—when he was at College it was taught that granulating wounds were proof against the infection of micro-organism or septic infection, but as every practitioner knew tetanus supervened when the healing process was far advanced and progressing satisfactorily. How was this? It is just contrary to what one might expect. In the treatment of tetanus, after the bacilli was developed in a wound and about the tissues, it ought to be a simple matter to treat that wound, either with agents that will destroy the bacilli or neutralise their secretion, whichever might produce the symptoms. Take the case of docking. One would naturally expect that an animal suffering from tetanus as a result of docking, if it were redocked and the wound dressed, it would go a long way towards the recovery of the animal. Even supposing that a portion of the poison had been absorbed into the system, if the source of supply was cut off, the vital forces ought to be sufficient to rid the system of the poison in it if it was developed in the wound locally, but as a matter of fact we are no more successful in treating tetanus now than 50 years ago. Scientific men were widely at variance on the question of anthrax. One man would say that a sample of blood was teeming with anthrax bacilli, and another scientist would say there was no evidence of anthrax bacilli—that the bacilli present were the bacilli of decomposition. In the Silloth cases, a number of scientific men swore that the bacilli were anthrax, and others that they were not. He could point to other opinions upon different cases in which microscopists were quite as much at variance as the practical men, indeed he thought if you want two men to disagree upon the same facts get two bacteriologists. Bacteriology seemed to him to be too largely made up of theories. Mr. Thompson instanced an isolated case of anthrax. In the Wigton district this spring, four cattle pastured in a field part of last summer and all winter, and one was struck with anthrax. It presented all the *post-mortem* appearances of anthrax. There had not been another case amongst them, and there was no reasonable possibility of any contagion or contamination. About two years ago he had what he considered a case anthrax in a certain stock in the neighbourhood of Wigton. The animal presented all the *post-mortem* appearances of anthrax, and he forwarded a portion of the spleen to Edinburgh, but they could find no anthrax baccilli. The case was not reported, and he concluded that it was not anthrax, notwithstanding that there were *post-mortem* symptoms of anthrax. But they lost another three cases in three months, and these were not reported at all. They were buried on the farm, contrary to the general rule, not in quicklime, but in the ordinary soil, and he allowed them to lie until decomposition had set in before they were buried. He believed a great deal of mischief was done by disinfecting the carcases and manure of anthrax animals. The best disinfectant they had for anthrax was decomposition. What interested the practitioner most was the amount of curative knowledge which could be gathered from bacteriology or any science. As far as he could see, notwithstanding all the work and time and energy bestowed upon bacteriology, it had not assisted curative medicine to any marked degree, and he did not think it had done very much in the line of preventive medicine. It might be presumptuous for general practitioners to express opinions, but he thought bacteriologists had a great deal to tell them before they arrived at the truth. Could Professor Bradley tell them any other disease which gave them these typical *post-mortem* symptoms of anthrax which was not pure anthrax. Both before the

passing of the Anthrax Act and since they had frequently come across isolated cases showing all the typical symptoms of anthrax. But they heard no more about it, and if they sent the blood or specimens for examination they were told it was not anthrax, and in some cases in which they never suspected anthrax, they got word back that it was anthrax.

Mr. THOMPSON referred to the Silloth cases which were certified to be anthrax, but in which no fewer than four professional men distinctly said they could find no trace of anthrax. From one of the cases portions of the body were sent to the Royal Veterinary College, London, and the New Veterinary College, and the Clyde Street College, Edinboro', and at none of them could they find anthrax bacilli. Yet from the same body Mr. John Bell and Mr. Hall, of this city, and Professor McCall, Glasgow, said they had found the anthrax bacilli. It was rather strange that they found them and yet none of the men who assisted in the *post-mortems*, with cuts on their hands, felt any bad effect. What was more, from the self-same body a rabbit was inoculated and took no harm; the poultry picked up the blood and pieces of flesh and so did the dogs, and they took no harm. From what he had seen and read of it, and from what he had heard from Mr. Wright and Mr. Little, it was not anthrax at all; it was a poisonous material which the horses had got in their food.

Mr. DONALD mentioned the use of tuberculin, observing that everyone at the last meeting spoke in praise of it. Some cases which he had tested he had condemned as tuberculous; and he had had the opportunity of testing two by *post-mortem* examination. A well-bred heifer which was thought to be tuberculous he subjected to the test, injecting tuberculin according to the instructions. The temperature rose to 106. A *post-mortem* examination showed a number of abscesses and chronic pneumonia. He forwarded portions of the lungs to Professor McFadyean asking if it was tubercle or not, and he replied that it was chronic catarrhal pneumonia. The next was the case of a cow which some months before was put up to fatten under his advice that she was tuberculous. After injection her temperature remained at 102. She was killed some six or eight weeks after, and her lungs were most distinctly tuberculous. Not satisfied with his own opinion, he forwarded the greater portion to Professor McFadyean, who replied that there was no doubt the animal was tuberculous. These were facts they could not shut their eyes to, and he believed from what he had seen of tuberculin that it was not so good a diagnostic agent as some scientists made out. In all experiments he had made with tuberculin he had never seen the animals suffer constitutionally at all, it had never done them any harm.

Professor BRADLEY, in reply, said Mr. Thompson's test was remarkably good in a way. Not only was good ground the proper pabulum necessary for the larger seeds such as oats, but it was absolutely necessary for microscopic seeds usually known as spores. Mr. Thompson touched upon natural immunity and wanted to know how it was that these spores floated about in such numbers and ultimately gaining access to the animal body, produced disease. We, as animals, were inhaling these spores, etc., by the thousand per day, and yet we continued healthy. The theory of phagocytosis had been put forward to explain this natural immunity, and it seemed at the time to be a very satisfactory explanation. It was supposed that these phagocytes, which were modified or specialised leucocytes, had the power of surrounding and devouring these germs. Some bacilli were said to have a positive chematactic influence over phagocytes; they secreted a subtle something which was a sort of bait to the phagocytes. Others had a negative chematactic influence, secreting something which had a contrary effect and drove away the phagocyte, and in these cases disease appeared, whereas it did not result in the former case. That was only one theory. There were a number of others,

but it would be useless to go over them. With reference to suppuration, Mr. Thompson seemed in doubt as to the causal agent of pus in an enclosed abscess. The best example of pus in an enclosed abscess was a case of strangles. In a strangles abscess it was possible to find streptococci, resembling the streptococci in ordinary pus. In these cases of enclosed abscess the strepto or staphylococcus must have been carried by the blood. How they entered the blood was of little moment. Germs could easily gain access to the blood. He saw it stated that it was almost impossible to get blood from a living animal or living person without getting some germs. The most healthy of us, probably, had circulating in our bodies numbers of different germs. Those who were against the germal theory would say, "Why did they reside there and cause no inconvenience?" It was just possible they really only existed there and did not live for any lengthened period, and in a lot of cases were, perhaps, just corpses floating about. Tetanus was an interesting and difficult subject to tackle. It was only recently that a satisfactory explanation could be given of the cause of tetanus, and to some people it did not seem satisfactory even yet. One great fact which pointed to the existence of the germ in soil was seen in military campaigns. Before the discovery by Nicolaier of this particular bacillus, tetanus was, after a battle, a common disease in the army. It was pointed out how the danger could be obviated by placing the wounded men in beds as soon as possible, in order that the wounds might not get polluted by the soil. Since then the percentage of deaths from tetanus had considerably decreased. Mr. Thompson's statement about dusting wounds with soil was to him a startling one, and he would have taken it as counter to all the laws of antiseptic surgery, but Mr. Thompson was careful enough to add that the wound must be a good one, *i.e.*, in a healthy condition. It was quite possible that if the soil was applied to a wound in a bad condition, tetanus would result. With regard to the use of the microscope, he said in the majority of cases of tuberculosis, the ordinary diagnostic tests by the ear, eye, &c., were sufficient to make one sure that it was a case of tuberculosis. But if there was a mild case of tuberculosis of the udder, then a microscope certainly had its use, that is to say, it was possible to demonstrate bacillus in the milk. It was by means of the microscope that we learnt the life history of the causal agents of disease, and it was only by knowing their life history that one could satisfactorily combat the ravages of disease. On the subject of anthrax, he had an inward quaking. Mr. Thompson propounded a conundrum, whether the disease was produced by the bacillus, or whether the bacillus was produced by disease. There were four postulates laid down by Koch, and unless they were all admitted, one was never at liberty to say that a particular germ caused a particular disease. First, the germ must be found in the animal, in the blood, or in the secretions; secondly, there must be cultivation of those germs, in some artificial medium outside the animal body to several generations, then with the pure cultivation, the disease must be produced again in a healthy animal, and, finally, in the blood or tissue juices of the animal inoculated, the bacillus must again be demonstrated. Would it not be rather strange to find that this could be done if the bacillus was the effect of the disease? Did not all this rather point conclusively that the bacillus was the cause of the disease and not produced by the disease? If the bacillus was produced by the disease, how was it they could take it out, cultivate it, inoculate it into another animal, and get precisely the same disease? He pointed out that it was not absolutely necessary for their growth that the germs of anthrax should have oxygen, as it was shown that the germ could grow out of oxygen altogether. To produce spores free oxygen is demanded. It was only when the blood was shed that the spores could be produced. The spores were capable of withstanding extremes of temperature—freezing, for instance, though frost

would very soon destroy the bacillus. Sunlight had the power of preventing growth, but the spore remained very hardy, even being able to resist boiling for a few seconds. An important point was this. It was almost out of the question to find a bacillus in blood that had been obtained from an animal some considerable time previously. It was almost impossible to find bacilli in the spleen a few hours after death, the reason being that the bacillus of anthrax could not live where putrefaction was taking place. If specimens were sent to any laboratory for microscopic examination, it should be portions of the extremity—the foot or one of the ears, for instance, because at these points putrefaction was last to reach. The President referred to the case of horses at grass rarely being affected with tetanus. That might be accounted for by the sanitary surroundings. Mr. Donald asked one or two questions. A punctured wound was one of the most difficult wounds to treat, and it always set up the greatest amount of irritative fever, and was one of the most slow of healing. A ligature, unless it was absolutely antiseptic, was liable to set up irritation. These were the only two reasons which he could give to account for tetanus in such cases. Granulated wounds were almost proof against infection, but though the phagocytes, which were present, might be sufficient to prevent the entrance of any germ, we must remember that the tetanus bacillus only lived on the surface of the wound, and the phagocytes might have practically no effect upon them. Mr. Donald made a sweeping assertion when he said bacteriology had done little for curative medicine. Bacteriology was first applied to human medicine, to which we must look for the greatest advances. He could endorse, to some extent, the statement that tuberculin was not such a good diagnostic agent as was at one time supposed. It was not so good as mallein, which was probably at the summit as one of the new diagnostic agents. Tuberculin was remarkably useful, but there were cases on record where it had not been successful. He was still open to hear the same charge brought against mallein.

Mr. THOMPSON said a number of cases of tetanus he had come across had been from wounds in the feet. But he had attended pit bottoms for 35 years, and though he had seen any number of cases of probed wounds in the feet, he had never seen a case of tetanus except on one occasion.

The PRESIDENT said he could endorse Mr. Thompson's remarks with regard to the pit ponies. For the past twelve years he had never come across a case of tetanus amongst them.

Professor BRADLEY said pits were tolerably free from bacteria, as a rule.

On the motion of Mr. DONALD, and seconded by Mr. PEARS, a hearty vote of thanks was passed to Professor Bradley.

Mr. DONALD proposed that Mr. Park's paper on "A Case of Schirrous Cord in a Colt," be taken as read and printed. This was seconded by Mr. THOMPSON, and carried.

Mr. SOULSBY, the president, then offered to read a paper at the next meeting on the diseases of the digestive system of the ox.

A vote of thanks was proposed to the Chairman, which was seconded by Mr. HEWSON and carried.

YORKSHIRE VETERINARY MEDICAL ASSOCIATION.

THE summer quarterly meeting of the Association was held on Friday, August 2nd, at the Royal Hotel, Scarborough. The President (Mr. Jas. Cooke, F.R.C.V.S.), took the chair, and the others present were: Professor Pritchard, London; Messrs. J. Clarkson, Garforth; J. W. Lazenby, Boston Spa; Frank Somers, W. F. Greenhalgh, Geo. E. Bowman, and A. W. Mason, Leeds; J. E. Scriven, Tadcaster; C. Lang, Bridlington; Gavin Scott, and

Geo. W. Pickering, Scarborough; M. Robinson, Barnsley; J. M. Axe, Doncaster; Henry Snarry, and Geo. Hardie, York.

The PRESIDENT said that before commencing the business he must express his pleasure at meeting them in Scarborough. He appreciated the honour of their company all the more, seeing that it was not customary to hold these meetings outside of Leeds. He hoped they would be able to combine business with pleasure, and he was sure those who were not acquainted with Scarborough would, if they prolonged their stay, be amply repaid by the natural beauties of the town and district.

The HON. SECRETARY announced that letters of apology for absence had been received from Mr. Chambers, Huddersfield; Professor Williams, Edinburgh; Mr. Pollard, Wakefield; Professor Penberthy, and Professor McFadyean, London.

The minutes of the last meeting were taken as read, and were confirmed.

Elections and Nomination.

The following new members were elected: Mr. H. G. Bowes, Leeds; Mr. C. Lang, Bridlington; Mr. Green, M.R.C.V.S., Sherburn-in-Elvet; and Mr. Brand, Leeds, was nominated as a member of the Association.

Annual Report.

The HON. TREASURER (Mr. J. E. Scriven) read his report, in which it was stated that expenses had been much as usual, except that they had had to buy more stationery, which would last them two or three years. There was a balance of £4 10s. 4d. in hand. Speaking of the number of defaulters amongst the subscribers the Hon. Treasurer said some of them had been defaulters for four or five years, and, though they had been written to with regard to their subscriptions, they did not reply. They amounted to about £25.

After some discussion the names were read out and again notified.

Mr. MASON moved and Mr. Snarry seconded that the Treasurer's report be adopted, and the resolution was put and carried.

The HON. SECRETARY reported that a letter was received on June 13th from the British Institute of Preventive Medicine, stating that they would be glad to receive any subscriptions at their earliest possible convenience. This matter had come before the Association on a previous occasion, but they could not give anything if they wished unless they had a balance of £20 in hand.

Mr. MASON moved that the Secretary be instructed to write to the Institute and inform them that they were unable to give anything.

Mr. SNARRY seconded, and the motion was carried.

There was also a letter from Mr. E. Falkner, thanking the Association for their letter of condolence with relatives of the late Mr. Thos. Greaves, Manchester.

The HON. SECRETARY moved a formal resolution to the effect that the Association's account with Messrs. Brown be transferred to the Bradford Old Bank. The change was proposed merely in order to meet the convenience of the Treasurer.

An objection was raised to the passing of the motion on the ground that three months' notice had not been given, according to the bye-law. The matter therefore dropped.

The Inspection of Meat.

The Rev. FREDERICK LAWRENCE, of Westow Vicarage, York, entered the room at this point, and asked permission to speak for a few moments on a subject concerning the veterinary profession. His request having been

granted, Mr. Lawrence said he was the hon. sec. of the Church Sanitary Association, which very recently organised a deputation to the Board of Agriculture and the Local Government Board, asking that no animal should be slaughtered until examined by a veterinary surgeon; that all meat, before sold, should be examined by a properly qualified veterinary surgeon, and that there should be established a scheme by which certain members of the profession should hold for two or three years scholarships for the purpose of learning meat inspection abroad. The Duke of Westminster headed their deputation, and 7,300 persons signed the memorial. Hearing that the meeting was being held, he thought that if they would be good enough to hear him for a few minutes, they would know that the Church was doing what she could to show her respect for the splendid profession to which they belonged. They wished to see such a change brought about that the veterinary profession might hold the position it did in some places abroad. There was a considerable amount of meat sold all over the country which never ought to be sold. If, however, the animal was killed in a properly appointed abattoir, after thorough inspection by gentlemen who had gone into the question, then, if no meat was sold until properly examined—to the exclusion of those who did it now, but were utterly unfit—the whole community would be immeasurably benefitted, and the welfare of the country would be greatly advanced. He would urge the Association to send a memorial, somewhat similar to the one he had mentioned, to the Local Government Board. His association was approaching the New Government, and their college might also do that. They might also propose a resolution condemning, in their judgment, the present mode of the examination of meat, and send that resolution to the Government. He had the assurance of the officials that all action brought to bear upon them would strengthen their hands.

The PRESIDENT said the subject was one which had engaged the attention of their profession for a considerable time, and they looked upon it as a grievance that veterinary surgeons were not appointed always as meat inspectors and inspectors of slaughter houses, dairies, and other places. He understood the Rev. Gentleman to say that they ought to go abroad to study sanitary science.

Mr. LAWRENCE said he referred to the examination of meat, because it had never been a speciality in England.

The PRESIDENT: But it is a special subject in our examination.

Mr. LAWRENCE: Certainly, but it has never assumed the position in England. It was thought, if the Government was asked to grant scholarships, gentlemen would have the advantage of studying the question in Berlin, and other places. You have never had the opportunity of studying it that you ought to have had.

The CHAIRMAN: I don't see the necessity for going abroad.

Mr. LAWRENCE said it was part of the memorial, and one to which great importance was attached. They felt that the question of meat inspection had not advanced to the height of importance to which it had risen abroad.

Professor PRITCHARD thought that the Duke of Westminster and the other heads of the movement ought to be satisfied themselves as to whether the veterinary surgeons had or had not taken the proper means of acquainting themselves with the question of the inspection of meat. It was a very serious matter, coming from them, to say a veterinary surgeon was not acquainted with the inspection of meat.

Mr. LAWRENCE thought that, if he retired now, some good would have been done, because he would convey to his association what had been said. They were trying to bring about an improvement in the meat supply, and they would not rest until veterinary surgeons had the position to which they were entitled.

Mr. SNARRY moved a vote of thanks to Mr. Lawrence. The thanks of the association were due to him for the manner in which he was going about his work.

The HON. SECRETARY seconded the resolution, pointing out that the subject had not been discussed, and, if it was to be discussed, it must be placed on the agenda paper for a subsequent meeting.

Mr. LAWRENCE then thanked the meeting for listening to him, and withdrew.

Specimens—Resumed Discussion.

Mr. W. F. GREENHALGH re-opened the discussion on the lumbar vertebræ of a fourteen years' old cart-horse, the specimen having, since the previous meeting, been sawn into sections. He went on to remind the members that, at the age of fourteen, this horse exhibited signs of lameness or paralysis. It was not necessary for him to detail the symptoms, because they had already been recorded. Since then, however, he had, by permission of the Yorkshire College, had the bone sawn up, and he believed it was still a difficult question to determine what was the cause of the paralysis. He would like the opinion of the meeting upon it. The Professor at the Yorkshire College thought it was osteo-sarcoma, but he could not see how that could be the case. The animal evinced no symptoms of paralysis until three days before his death, and, when he was perfectly paralysed eventually, he had him killed. The result was before them.

The PRESIDENT said this was a specimen which was brought before them at the last meeting by Mr. Greenhalgh, and they expressed a wish to have it boiled down and investigated more minutely. He himself had not made a thorough examination of it, but he believed it was the opinion of some of the members on the last occasion, that there was a fracture of some of the vertebræ. There was evidently much enlargement, and most probably fracture.

The HON. SECRETARY reminded the members that he gave it as his opinion at the last meeting that it was fracture of the vertebræ, and Nature's attempt to heal it.

Professor PRITCHARD said that as far as he was able to judge from the *post-mortem* appearances, he did not think it was a case of fracture. He thought that, as the result of a fracture, such an amount of extravasation of blood would have taken place that, instead of a long-standing case of disease, they would have found a broken back in its entirety. He looked upon it as one of those cases of diseased spine which were not uncommonly met with in old animals, and the disease had gone on to such an extent as ultimately to interfere with the spinal cord, with the result that paralysis supervened.

The PRESIDENT pointed out that according to the description in Professor Williams' work on fractures, together with the opinion of many veterinary surgeons, fracture might take place with the displacement of the bones, and paralysis ultimately set in.

Mr. GAVIN SCOTT said there was a case in Scarboro' two years ago where it was said that they had fracture of the lumbar vertebræ, after which the horse came back to the stable and went out to hunt next day. It carried a lady over some fences, was put in the stable again, and, after three or four days hunting, it was considered that the animal had fractured the lumbar vertebræ on the previous day. He never could understand how that could be. These were the facts of the case, and the man who had charge of the horse and allowed it to go out hunting had to pay damages for it. If there was a fracture in the specimen before them it was not complete.

The PRESIDENT thought there was a difficulty in determining what was the cause of the present case without further boiling down.

Mr. GREENHALGH said he would like the members to express an opinion. Was it due to injury?

Mr. MASON thought it was one of those common cases known as "jinked" back.

The PRESIDENT: It might be a fracture of the bone without separation.

Mr. GREENHALGH: I should like to have a definite opinion.

Mr. SCRIVEN thought an injury had been caused by something falling on the horse's back, and it had been going on for years. So much pressure had been put on the spinal cord that paralysis had set in.

Mr. PICKERING said he believed the opinion of the meeting was that it was not due to fracture, but that at some previous time there had been an injury to the horse's back. It might have been a severe sprain. Whether it was a malignant growth or not they were not prepared to say without a microscopic examination.

The HON. SECRETARY: We shall be glad to see the specimen at the next meeting after being boiled.

Professor PRITCHARD, London, then read a paper on

SOME DISEASES OF THE HORSE'S HOCK.

The writer, who was received with applause, said that, in treating this subject, he had elected to speak more particularly with regard to some of the pathological conditions which affected the softer structures of the joint. He had a reason for leaving out bone spavin, but it was, perhaps, not necessary that he should mention it. Of those selected he proposed to give them a very brief description, with the opinions of those who had dealt with the matter, and introducing occasionally his own ideas with regard to them. The first one he would treat with was "bog spavin"—an enlargement at the antero inferior inclined to the inner part of the hock. It was an enlargement which, under ordinary circumstances, readily yielded to pressure, and an enlargement which, in some instances, was associated with another disease of the softer structures of the hock, viz., "Thoroughpin."

When he was at College, a minor importance was attached to the pathological condition of bog spavin, and, probably, mainly for the reason that it seldom gave rise to lameness. Circumstances altered with the times, and the period had now come when bog spavin, at any rate, in some classes of horses, was looked upon as rather a serious matter—so serious, indeed, that the judges in show rings, and the veterinary inspectors in connection with them, not infrequently discarded horses, particularly young ones, affected with bog spavin. He was now alluding to the cart horse. He need not tell them that bog spavin was nothing more nor less than a dropsical condition of the main joint of the hock. It was on the causes of the malady he wished more particularly to dwell. Years ago, it was looked upon as the result of sprain or concussion. In his opinion, anything which would give rise to such an increase of the quantity of fluid contained in the capsule of this large joint as to enlarge the size of it, putting it on the stretch, as it were, would create a bog spavin. For example, in a case where a horse, with very extravagant hind action, was frequently called upon to do his utmost with his hind limbs, particularly when young, would occasion it. Calling upon stallions to cover mares larger than themselves, or to cover mares when too young, or an unusual large number of mares; acts which would necessitate a more than ordinary amount of exertion of the hocks, and acts which would consequently produce a repeated stretching of the capsule of the joint, and, of necessity, an ultimate increased calibre of it. He was further of opinion that these *blown* hocks, as they were termed very frequently, were due to another cause, most frequently in operation in young cart horses intended mainly for show purposes, he meant the extreme amount of forcing, in the way of feeding, to which these animals are subjected, he had had many opportunities of judging of this, and the more he saw of it the more he became convinced of

existence of the fact. This probably was the cause in operation which had led many veterinarians to the conclusion that bog spavins were hereditary, and leading them consequently to rejecting animals at shows that were so affected. While agreeing that such animals should be prevented from becoming prize-winners, he doubted very much whether the veterinarian was justified in looking upon this condition of the hock, as being due, even in a majority of instances, to hereditary taint, and he would repeat that in his opinion this condition of the young cart-horse's hock was traceable to forcing and to forcing only. He wished his audience to understand that although he was willing to admit that in many instances bog spavin was due to concussion and sprain, in by far the larger number of cases it was to be traced in the other causes he had instanced.

He then passed on to speak of another enlarged condition of the hock commonly called "Thoroughpin." This he need not say was a swelling which appeared at the supero lateral part of the back of the joint. The swelling might appear on one side only—more frequently on both—but it was considered as much a thoroughpin if found on one side only or on both. The real pathological condition which they spoke of under this term was a dropsical condition of the bursa placed below the principal flexa of the hind limb and the calcis. When speaking of bog spavin he said it was sometimes associated with thoroughpin; and there were numbers of cases in which, by applying pressure to the bog spavin the enlargement in thoroughpin increased, and *vice versa*. This had led to the conclusion by some that under all circumstances there was a connection between the cavity of this bursa and the cavity of the true hock joint. He had carefully dissected these over and over again, and, in the majority of cases where he dissected a young hock he found a decided partition between the wall of the bursa and the wall of the joint of the capsule. Thin, he would admit, but there it was. They might ask how he accounted for the increase of the one enlargement by applying pressure to the other. He accounted for it in this way: that owing to the increased size of either the capsule joint, on the one side, or the bursa, on the other, absorption of that partition took place, and ever afterwards there was communication between the two. That was his reading of the matter, though it might, of course, be incorrect. The causes he need not dwell upon beyond saying that he considered the principal to be that of sprain from over-exertion; but he would make a few remarks as to the treatment of the disease. He did this because they were led sometimes by their clients to do really what they pretty well knew would be next to useless. He was a great believer in the firing-iron in cases of thoroughpin, and he believed he was aware of every mode of treatment adopted in these cases. Some, he knew, advocated very strongly the use of the truss, and he believed his friend and fellow-pupil, Mr. Santy, was a great advocate of the use of a particular kind of truss in such cases. For his own part—perhaps it was more his misfortune than anything else, but he had not yet seen a truss applied to a horse's hock, especially if such horse were of an irritable temperament, where sufficient pressure would be brought to bear without excoriation taking place as the result. The anti-phlogistic treatment might be adopted apparently successfully, but the relief was only temporary. In some instances blisters answered admirably, but, in his experience, in the majority of cases, instead of having a beneficial effect, they had absolutely doubled or trebled the enlargement. He had, however, never yet seen a case where the firing-iron had failed to reduce the enlargement. He was not now speaking of a case of long standing disease in which the walls of the sac had undergone transformation into strong fibrous or even bony material, but where the wall of the sac was still thin, and the contents fluid, if the animal had been properly prepared with physic and cooling applications and nicely fired

afterwards, no matter how large the thoroughpin might be, he had never seen a case where the firing iron had failed. Passing on to curb, Professor Pritchard said he was going to make a statement which would probably astonish everyone in the room. It was that he had worked very hard during the past eighteen months, and particularly so since he received the invitation to deliver that lecture, with the object of finding a specimen of true characteristic curb in a dead animal. And would they believe that he had utterly failed? They had as large knackers' yards in London as there were anywhere in the country, and, though he had two or three men well bribed to try and find a good specimen of curb, they had up to the present utterly failed. He had looked over hundreds of dead horses himself with the same result. There were curbs existing, because he had several under treatment now, but they were not so plentiful as some people would have them imagine. What was a curb? In plain language it was an enlargement at the back of the hock, about opposite to the heads of the splint bones, and it was an enlargement which was exactly in the centre of the back of the hock. He was speaking of a curb *per se* not of one where they had a large mass of disease at the back of the hock. What was this enlargement due to? They were told by some that it was a sprained condition of the calcaneo cuboid ligament. In refutation of this he advanced the following argument. It was so situated and so connected with these bones—the calcis, the cuboid, and the outer splint bone—and it was of such strength that he thought it almost impossible any exertion on the part of the animal could produce a sprained condition of it. In reply to this it could be very truly said that there was no structure in the body which might not become lacerated. He was willing to admit that; but when they took into consideration the fact that the hock was more tightly knitted together than any joint in the body they must certainly allow room in their minds to question whether the calcaneo cuboid ligament could become even partially sprained. Again putting on one side the matter of strength of the ligament, he would admit for a moment that this ligament might possibly be sprained and that it should be enlarged as the consequence of the sprain. How could it be got over that such enlargement was not in the centre of the back of the hock—the situation of curb could not be. The ligament was placed towards the outer side, and that was an argument he ventured to think was beyond contradiction. Another theory advanced was that it was a sprain of the ligament connecting the calcis and the cuboid together. The argument he had advanced would answer that. The late Professor Spooner used to teach that it was a sprain of the annular ligament at the back of the hock. Another opinion was that it was a sprain of the tendon superficially placed there. In reply to that he would say that they had never found this tendon thickened at this particular part even if it became sprained. It was always lower down. He had never seen a case where there had been the slightest thickening of the perforatus tendon at this part. To his mind Percival got nearest to the true pathology of curb. He said in his book that it was an inflamed condition of the tissue placed between the annular ligament and the tendons at the back of the hock, and that the thickened condition of this tissue around the tendons formed almost a diseased sheath. He would give them his own idea of it. He had told them there was an annular ligament at the back of the hock, and they knew that the perforatus tendon ran down the back of the hock. It was necessary for the true extension and flexion of the hock that this perforatus tendon should move in apposition with the annular ligament, and, to allow of its doing so without friction taking place, Nature had provided at this part a delicate portion of synovial membrane. An inflamed condition of this synovial membrane and its results would give rise to the enlargement 'exactly in the situation of that termed curb. He had repeatedly seen the deposition under the annular

ligament on *post-mortem* examination, and had he been fortunate enough to have secured a specimen recently, argument in proof of the theory would have been unnecessary. The Professor proceeded to explain that he considered the inflammation was set up in the affected tissue by some extravagant action on the part of the animal, causing more than an ordinary movement between the tendon and the annular ligament, giving rise to slight laceration of the synovial membrane there placed; and he might say as a passing remark that he was very much inclined to the opinion that many cases of so-called sprained tendons and ligaments in other parts of the limbs, were really cases of disease affecting synovial membranes in connection with such tendons and ligaments. In the examination of horses' hocks he would suggest that great care be taken that an undue development of the head of the outer splint bone be not mistaken for the enlargement of curb, and pointed out that in such cases the undue size would not be in the central line.

The Professor next alluded to an enlargement in the front of, and inclined to the outer portion of the hock, a dropsical condition of the sheath of the "Peroneus" tendon, considering it of common occurrence, and submitted the question as to whether lameness had, in the experience of any present, been known to arise from it? He had never been able to trace defective action to it.

The lecture was brought to a close by some remarks upon laceration of the ligaments in the front of the hock, which bound down, and held in their proper position, the tendons as they passed the front of the joint; the symptoms indicative of such lesions, together with the treatment advisable to adopt.

The Professor apologised for having passed rather hurriedly over some of the subject matter, but trusted he had said sufficient to create some interest in it, and to give rise to a discussion.

The PRESIDENT moved that the thanks of the meeting be given to Professor Pritchard for his address. The subject on which he had spoken was one which was of the greatest interest to them. If they found a horse lame, or in an examination as to soundness, they generally looked to the hock. When a student in London, he had the pleasure of listening to Professor Pritchard's pathology of curb, and he had always adhered to those ideas on curb ever since. He found people, especially dealers, had a greater horror of capped hocks even than spavins, and they considered it a great depreciation in an animal, and a difficult thing to get rid of too. With regard to bog spavin, he quite agreed with Professor Pritchard, and he thought all of them who had used a truss not properly made would do the same. Improper pressure, he thought, was calculated to do more harm than good. If properly applied, however, it relieved the bog spavin or thorough-pin, though only temporarily. He always condemned a horse under five years old with odd hocks, but what constituted unsoundness at four was probably soundness at six. There was also a difference of opinion as to whether spavins were hereditary, but he did not see that it was absolutely necessary for an animal to be born with a spavin in order to constitute hereditary spavin.

Mr. MASON said that in speaking of thorough-pin, Professor Pritchard mentioned absorption of the partition. He remembered that at college the professor gave him this very partition to find, and, though he thought he had found it, he was told that he was mistaken. As regarded curb, it was interesting to him at the present moment, as he had been asked to give an opinion on a horse but had not been allowed to manipulate. He should be glad to have the opinion of Professor Pritchard. Standing in one position, he could distinctly see there was a curb, but looking at the animal from another aspect his opinion wavered. Unfortunately he could not manipulate, and, on

being pressed for an opinion, he said he could not give one without being allowed to manipulate. He believed the animal had undoubtedly a curb, and he was of opinion the Professor had examined the same animal. Cases of sprained hock were, he thought, common where there was lameness in the hind limb. He would also like to ask Professor Pritchard whether he had even seen cases of bog spavin and thorough-pin in poor stock. As a boy he remembered the animals were not forced as at present, and he never remembered seeing any of the young stock with which he had to do suffering from thorough-pins or bog spavin.

Mr. BOWMAN, speaking of blown (?) hocks, said he came across a great deal of it in the East Riding, and he nearly always found that it came on in animals boxed up and overfed. When they got to a certain size he generally advised clients to turn them away and feed on plain food. Curb, he considered, was very often in the beginning sprain of the annular ligament. He saw the horse to which Mr. Mason had referred, and he always thought that animals curved on the outside of the hock were more liable to it than those with wide hocks. Not long ago he had a horse which had windgalls very badly on the outside of the hock, and when put to severe work it went lame from them directly.

Mr. SNARRY was of opinion that there was no fixed remedy for thorough-pins. A few years ago he was called to a hunter which had been blistered twice. He said he could do no good. The owner said he was no good as he was, and told him he could have a go at him. He injected a weak solution of tincture of iodine, and had some pads of tow soaked in cold water and bound on tight. This went on for a few weeks. The leg swelled right up, and when it all went down the thorough-pin was less than before. He had another go, injected iodine again, and paid more attention to the pressure. That animal got perfectly clear of his thorough-pin, was hunted another season, and sold for £140. Turning to bog spavin, he had found it was unusual in young animals, and especially in ill-conditioned ones, but they went away by themselves, or, at any rate, simple charging was all that was necessary. He would like to ask Professor Pritchard what this was that they found across the hock on manipulation. They were told it was a predisposition to curb.

Mr. AXE said he had had a great many cases of bog spavin through his hands, and he had always found that they occurred in young horses of a plethoric condition. After cooling them down and turning them out he had found that they came right. As the horses got older and stronger the spavins went away gradually, though perhaps they were six or eight months in doing it. He had also found blisters effectual, with the use of the pointed iron occasionally. Speaking of curbs, Mr. Axe said he had found a horse had sometimes been strong on the head of the small metatarsal bone on one hock, and had eventually fallen lame on that hock. He would ask Professor Pritchard whether that had anything to do with curb putting out from that part?

The HON. SECRETARY expressed the pleasure it had given him to hear Professor Pritchard's address, and his great additions to their pathology. In his neighbourhood they almost always resorted to physic, firing, and blisters, and they were the only remedies. He was glad to hear of Mr. Snarry's success.

Mr. GREENHALGH expressed his regret that bone spavin had not been touched upon. He would ask the lecturer if there was cruelty attached to the working of a horse with bone spavin?

Mr. PICKERING said he had taken great interest in hock lameness for years, and he had always been nervous as to whether a horse had spavin or not. He was hoping that Professor Pritchard would touch on spavins in horses

with respect to lameness. He had passed horses with hocks which would have condemned them in nine cases out of ten, and he believed people generally jumped to the conclusion that a horse was spavined if lame. He found that bog-spavin entirely disappeared in most cases after a dose of physic, rest, and repeated blistering. Was the lecturer in favour of pyro-puncture or bar-firing? As to curb, he did not think any man could give an opinion without manipulation.

Mr. ROBINSON dealt with the hereditary nature of bog-spavin, and said he had animals which had developed it through four generations.

Professor PRITCHARD, in reply, said that in speaking of the ligaments he was referring to a complete rupture of them, and he could easily understand where the front hock had been enlarged, lameness had arisen from the sprained condition of the ligament. From Mr. Bowman's description he gathered that he had seen a case of lameness from windgall on the outside. He must confess that he had never come across a case where lameness had resulted from a dropsical condition of the sheath of the peroneus. It was very unsightly, but if examining a score of horses, all suffering from it, he should certainly advise purchase and mention of it in the certificate. With regard to Mr. Snarry's operation of opening a thoroughpin, he considered him a bold man. He guarded himself, however, with the statement of his client that he might do just what he liked. There was an end of the responsibility. Mr. Snarry was not the only one who had advocated the opening of these enlargements. In fact, many years ago the French practised it repeatedly, and in England veterinary surgeons had opened them unwittingly. This had been done by the insertion of setons, and, where the animal had outlived the treatment, he had done so with considerable trouble, and with a thickening of the limbs. If they did open this sac, he advised them to have the permission of the owner. Even then he would have the animal shut up in a box, so that he would not be talked about afterwards. With respect to the manipulation of the back of the hock, if a horse had got a recent curb, and it was small, they would notice that after going so far the finger would slip on a little more quickly. This was due to the pressure of a fluid, and this was the curb. It should be perfectly smooth and even, and, whether the horse was lame or not, the presence of a small enlargement indicated curb. He agreed with Mr. Axe with reference to the head of the small outer metatarsal bone being enlarged and preceding a case of curb, but he read that in this way: There was already inflammation going on in the ligament attached to the end of the metatarsal bone, and there was extension of the inflammation to parts which subsequently gave rise to curb. Answering the question generally, he did not think that a horse with an undue development of the head of the outer small metatarsal bone was predisposed to curb. If they had a good-shaped hock, the extra development of the head of the bone would not have this result. He was pleased to hear from Mr. Somers that he had made an addition to the pathology of the profession. The profession was welcome to it. With reference to the question put, whether working with bone spavin was an act of cruelty, he was inclined to think there was something to read between the lines. If they worked an animal in pain it was cruelty. If an animal had bone spavin and was not lame from bone spavin, it was not cruelty. Mr. Pickering observed that it was difficult to detect spavin. There was no doubt about it. At the same time he was quite willing to admit that he should be very sorry to form an opinion as to whether one hock was diseased without having the opportunity of examining the other. There was one point which should influence them, and that was the way the animal used his hocks. The high-heeled shoe was a mode of treatment which should be adopted in all cases of lameness of the hock. As regarded firing, in cases of curb he should have recourse to the pyro-puncture, but in cases of thorough-pin he

should line-fire. As to whether bog spavin was hereditary, it was a very difficult question to answer, but he should hesitate very much before saying that it was. He was inclined to believe that at the present day they were forcing their animals to such an extent that they could almost produce any morbid condition in them. If they had a sire and a dam both affected by bog spavin, and they were careful in breeding and rearing them, he believed they would breed it out in the second generation. The way in which animals were now forced was something beyond all common sense.

The PRESIDENT moved that the thanks of the Association be given to their esteemed friend Professor Pritchard.

Mr. AXE seconded, and the resolution was heartily approved.

Professor PRITCHARD having responded, the proceedings closed by the President entertaining the members to tea.

FRANK SOMERS (Leeds), *Hon. Sec.*

EASTERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE quarterly meeting of the Association was held on Thursday, August 22nd, at the Royal Assembly Rooms, Yarmouth. There was a good attendance of members, and Mr. James Simpson, President of the Royal College of Veterinary Surgeons, honoured the gathering with his presence. The members attending were: Messrs. W. Bower, East Rudham; E. W. Wright, Yoxford; C. Clarke, Reepham; J. Barr, Halvergate; T. E. Auger, Wymondham; H. Wilkinson, Martham; W. Shipley, sen., Yarmouth; J. E. Kitchen, London; J. Thurston, Fressingfield; W. Turtill, Wickham Market; R. C. Tayler, Colchester; J. Pollock, Norwich; S. Smith, Lowestoft; W. Shipley, jun., Yarmouth; G. Johnson, Henley; H. Gamble, Downham Market; H. Thurston, Fressingfield; J. D. Allman, London.

The proceedings were prefaced by an excellent luncheon, at which the President of the Association, Mr. F. Case, of Swaffham, occupied the chair. At the conclusion of this repast there were a few toasts. "The Queen" having been honoured,

Mr. BOWER proposed "The health of the President of the College," who, he said, was always striving to advance the interests of the profession. The toast was accorded vocal honours.

The PRESIDENT said the toast was one that interested them as much as him, but he was glad that this year he would be their mouthpiece on the many occasions on which that toast would be proposed for acceptance. As they were aware, the College went on for very many years in a humdrum fashion, but within the last few years changes had taken place, changes which certainly affected those parents who proposed to place their sons in the veterinary profession. The introduction of the four-years' course was hailed with delight, and it was thought that this would afford an opportunity of thinning their ranks, or, at any rate, keeping the profession more select as far as numbers were concerned. Since the introduction of the four-years' course, those gentlemen who hailed with delight the idea of extending the curriculum have married, or, being already married, have had sons, and they are now eligible for entrance to the Royal College of Veterinary Surgeons. Then came the question—Had they done wisely in extending the curriculum and increasing the output from their own pockets? That would be a selfish way of looking at it; but if they were to keep pace with the times, to retain, or, rather, obtain that position which they claimed, and to which they had a perfect right, then they would say that the Royal College had done wisely and well in extending the curriculum. The results had not been very disastrous to the veterinary students, while the effect upon themselves had not been to assist them; but he believed that in the near future they would have, as they had at present, a class

of students entering college who would be the means of raising their profession and obtaining for them that social position to which they had a right. If the students who were sent to the colleges and brought into the profession, were the sons of men capable of maintaining them in a proper position at college for four years; then when they emerged from their student careers, they would do for others what they had endeavoured to do for them. There were not many questions now of very great importance before the Council. There was that old question of their grievance against the Board of Agriculture, and this was a question which he hoped might be settled during his presidency. Whether it would be settled in their favour, or they be condemned to occupy their present position, remained to be seen. So far as he was concerned, he was making every endeavour to obtain for the profession that recognition to which they were entitled. He was in communication with the member for his district and other members of parliament, with the object of obtaining for the profession an interview with the President of the Board of Agriculture. If they could obtain this, and calmly and seriously lay before him the views of the profession, and the position in which it is placed in regard to the public, and also showed that the public is not being fairly treated considering the large amounts it has to contribute for the support of the Animals Department of the Board of Agriculture; then he believed they would be successful, especially if they showed that both they and the public had a grievance against the Board of Agriculture. If he was successful in bringing about the interview, it would be his duty, after consultation with the Council, to prepare such a tale as would appeal to the heart of the President of the Board of Agriculture. He had to thank the proposer for the kind way in which he had referred to him personally, and his hearers for the handsome way in which they had received the name of the College.

The health of Mr. President Case, proposed by Mr. W. SHIPLEY, sen., was also warmly greeted, and the President made fitting response.

A Member Elected to the Council.

The HON. SECRETARY made the gratifying announcement, amid applause, that their member and candidate for Council, Mr. Bower, had been elected.

The "National" to Visit Yarmouth.

The HON. SECRETARY then made the equally pleasing intimation that at their request he had invited the National Veterinary Association to visit the Eastern Counties, and Yarmouth had been selected for the 1896 annual meeting. Mr. W. Bower had been chosen as the President of the National for that year.

Nominations.

The HON. SECRETARY proposed, and Mr. W. SHIPLEY, senr., seconded for nomination as a new member Mr. Balls, of Yarmouth.

Mr. THURSTON nominated Mr. Roberts, of Diss, and Mr. BOWER seconded.

The HON. SECRETARY proposed Mr. Mullane, of Bungay; Mr. Thurston seconded.

The HON. SECRETARY also proposed Mr. F. B. C. TAYLOR, of Thuxton; Mr. S. SMITH seconded.

All four nominations were accepted, and the gentlemen will be proposed for election at the next meeting.

Next Meeting.

Mr. TURTILL proposed that the next meeting be held at Ipswich. The HON. SECRETARY seconded.

An amendment was moved in favour of visiting Colchester, but only the proposer and seconder voted for it, and Ipswich was therefore selected, the date being left to the Committee to arrange.

A Resignation.

The HON. SECRETARY stated that Mr. T. Slipper, who had now settled in Tamworth, wrote to him resigning his membership of the Association. He had been their Secretary about five years and this was the first time he had ever received a resignation.

Tuberculosis in Cattle.

The HON. SEC. then read a letter dated Edinburgh, July 25th, 1895, from the Scottish Metropolitan Veterinary Medical Society, addressed to the President and Council of the Royal College of Veterinary Surgeons, as follows:—

"The President and members of the above Society, which numbers on its roll many of the leading veterinarians in Scotland, are of opinion that the rapid and alarming spread during late years of bovine tuberculosis among the cattle generally, and the dairy stock, in particular, of Great Britain and Ireland, cannot but be regarded in the light of a great national danger, and that stringent measures to prevent the extension of this dangerous and insidious disease are urgently necessary, and should be at once entered upon.

"They therefore respectfully request the influence and aid of the President and Council of the Royal College of Veterinary Surgeons to bring these indisputable facts, and the opinions formed thereon, to the notice of the Minister of Agriculture.

"Further, that the Royal Commission formed to investigate this disease, in relation to its danger to human life, have some months ago submitted their conclusions to the Government, that tuberculosis was prevalent in cattle, including dairy stock, and was communicable to mankind, through the consumption as food of their milk and flesh, and that this Society regrets that so grave a state of matters should continue to exist unheeded by the Government.

"It is, moreover, their opinion—

1. That bovine tuberculosis should be scheduled in the Contagious Diseases Act of 1894.
2. That all dairy cows should be placed under veterinary supervision.
3. That among all suspected herds and dairy stock, the use of the diagnostic test, "tuberculin," under scientific supervision, should be made compulsory.

"The co-operation and support of sister societies in the veterinary profession have been earnestly requested, as the Scottish Metropolitan Veterinary Medical Society considers that a duty has devolved upon the whole profession to combine to strengthen the cry to the Government for the adoption of measures whereby bovine tuberculosis in this country may be checked, and ultimately extirpated.

"It would, in conclusion, further point out for the consideration of the Government, that the longer the delay, the greater the difficulties and the attendant expense that will inevitably follow."

The PRESIDENT of the Royal College said that he had received a similar communication which would be laid before the Council at their next meeting. Without expressing any opinion as to whether tuberculosis should be a scheduled disease or not he might ask them to be cautious before coming to any conclusion upon the question, because they would doubtless consider whether tuberculosis was a disease that could be readily communicable to human beings except where the mammary gland is affected with tuberculosis. They would have to consider whether it was advisible to urge upon the Government, the destruction of—he did not hesitate to say—hundreds of thousands of cattle, because in his opinion hundreds of thousands of cattle were affected with tuberculosis at the present moment, if the disease was not

destructive to the life of man. It was a serious thing when a profession like their's represented to the Government that tuberculosis was communicable to man not only through the milk but from the flesh of animals and urge upon them at great cost to the English taxpayer that they should include this disease of tuberculosis in the schedule of diseases and adopt the course suggested by the Scottish Society's circular, that the tuberculin test should be applied to all animals suspected. How were they to draw the line? Might it not be considered by every veterinary surgeon that an animal showing symptoms of ordinary wasting is subject to tuberculosis? In the event of the test being applied and it is found that the animal– not perhaps a milch cow at all but a store beast—is affected with tuberculosis, was it right to urge upon the Government the destruction of all these animals.

Mr. W. SHIPLEY, sen., said he did not think it would be right for the association to express an opinion as to the desirability of making tuberculosis a scheduled disease. Before they did that the question should be thoroughly gone into, and the Council was the proper body to do that. They all knew that it was a most dangerous disease, but at the same time, if they took the course suggested, it would necessitate the destruction of a vast amount of property which might not be advisable.

The HON. SECRETARY said that there was a considerable amount of tuberculosis in cattle at the present time, but as to whether it was a danger to human life, he would not like to say. It certainly was not to the extent they were led to believe, except in special cases. They did not want to be snubbed, nor to speak without their book, and therefore they should ask the Royal College to undertake some investigations and present the matter in a proper light to the profession before the Board of Agriculture was approached. He therefore moved that we, the members of the Eastern Counties V.M.A., suggest that the Royal College of Veterinary Surgeons should investigate the subject of tuberculosis in cattle and place a report before the members of the profession rather than before the Board of Agriculture.

Mr. SMITH seconded.

Mr. BARR thought that they should concur with the Scottish Association so far as dairy cattle were concerned, whose milk was used for food purposes. Milk was known to be much more infectious than the flesh, and much more notice should be taken of that than of the flesh from store cattle. He believed that hundreds of infants died every year in the towns from taking the milk of tuberculous cows, and so far as the circular related to dairy cows they should take notice of it. He knew of three or four cows in his parish which were infected, and whose milk he declined to receive into his house. In one instance he advised a man to get rid of an infected cow, but he refused, and the cow died six months afterwards from tuberculosis.

The resolution was then put and carried unanimously.

Rule Rescinded.

Mr. AUGER moved, the President seconded, and it was unanimously resolved, that the rule allowing payment of 5s. per head from the funds of the Association towards the cost of the annual dinner be rescinded. It was explained that this had been tried as an experiment to secure a greater attendance of members, but it had failed.

ABDOMINAL SURGERY.

Mr. W. SHIPLEY, sen. (the Hon. Treasurer), then introduced as a subject for discussion the question of abdominal surgery. In the course of his address he said:—

He was not present at Birmingham at the annual meeting of the National Veterinary Medical Association, where Professor Macqueen brought forward

a very interesting and instructive paper upon operations of the abdominal cavity, more especially in horses. Hitherto they had always been led to believe that an operation into the abdominal cavity was almost certain to be attended with fatal results on account of the extremely sensitive nature of the peritoneum. When they thought of the enormous injuries and the extensive wounds seen in the abdominal cavity of horses, with protrusions of the intestines and of the omentum, which under some circumstances was removed, and the ultimate results which had not been anything like fatal, it was worth serious consideration whether up to the present time they had not thought wounds of the abdomen much more serious than they really were. Take the operation adopted for the removal of the testes in rigs. How was it done? They put the animal down, made a slit in the scrotum, drive your arm in, push your hand through the muscles, rupture the peritoneum, poke about amongst the intestines and remove something, probably the testes. After a bit the animal is allowed to get up and he does very well. There has been no antiseptic precautions, no chloroform to keep the animal under proper conditions, but after doing all this the animal recovered. At the present time of day that could not be a proper method of operation. In ordinary surgical practice they saw the most extraordinary operations performed with proper antiseptic precautions under chloroform which in days past would have been thought to be thoroughly impracticable. He knew the difficulties veterinary surgeons laboured under in regard to antiseptic treatment. They might be called in to attend a horse with a twisted bowel, strangulated hernia or it might be a calculus which they could detect by an examination per rectum. Was there anyone amongst them who would dare to put the horse down and operate on him in the farmyard, say. Though he appreciated what Professor Macqueen had put before them he very much doubted whether veterinary surgeons in ordinary practice were in a position to carry out properly the antiseptic precautions necessary in operations of the kind, and he would like the members present to give their practical experience as to the advisability of having recourse to these methods which were thought right to adopt in cases of the kind. As country veterinary surgeons would they be justified supposing they knew a horse had a calculus, immediately on finding that the calculus in the intestine was causing an obstruction to put him down, and by incision into the abdominal cavity to attempt to remove that obstruction? Or should they let the thing take its course, and allow the animal to die? He had nothing to put forward in regard to what should be done. He wished he had; but when they saw the extraordinary abdominal injuries that horses received, he thought they should consider whether they ought not to be in a position to make more attempts to cure their patients than they had hitherto done. He had never opened the abdominal cavity except in case of castration, and in removing a foal at chance times from a mare and her immediate destruction afterwards, or by accident, and he would like to know if members of the Society had, and could suggest any way or means whereby they might carry out these operations with anything like a hope of success. He thought that they ought to do so. Their surgery should be quite equal to that of the sister profession. Certainly veterinary surgeons had not the feelings of their patients to consider, which their professional brethren had, but they had very great difficulty in carrying out the antiseptic treatment in a proper manner, which doctors had not. They could not get clear of the horse's surroundings. If a man had to be laid on the table and his bowel taken out, scraped or cut, or what not, doctors could do it in a clean, suitable room, with all the proper antiseptic treatment required. There were generally three or four surgeons present to assist—some one to administer the chloroform, another one to watch the sponges, a third to see that proper antiseptic measures are taken, and the rest of it, and

the operation is probably successful; and very good it all is. If their patient dies, they are free from all blame and responsibility. They have done that which is best; they have endeavoured to save the life of their patient, and, if he dies, they have simply failed. He would ask again, could they put the same rules and regulations into force in regard to their patients? He had very serious doubts of it. If they had a calculus to deal with, they made an incision into the abdominal cavity; they might succeed in finding it and bringing it to the opening; then they had to remove it, and the probability is, where it had to be removed from the intestines, it would mean an incision through the bowel itself, which would be a much more serious operation than simply opening the abdominal cavity. Whether it would be successful or not, he did not know. So few of their members were present at the National Association meeting, that he thought the subject was one which he might reasonably place before them. He desired to ask Mr. Bower if, in the course of his experience in a case of obstruction from calculus, he had been able to detect it by rectal exploration, and where he had done so, if he thought it at all probable that he could have removed it by operation.

Discussion.

Mr. BOWER said the subject was a very suitable one for discussion. He had detected calculi by exploration of the rectum. Before they could operate on the abdomen, they had to obtain the consent of the owner, and have someone to assist them; but there was something worse to fear than the operation, and that was the after treatment. Position had a great deal to do with it. They could operate on a domestic animal the same as on a human being, but they could not get the domestic animal into a position favourable to the recovery from the operation. The next thing was food. They could give the human patient very little of that which might be nutritious, and he would eat it without any pain or fighting, but it was difficult with their patients if they had to pour anything down them, because if they were put under restraint, the least exertion on their part would strain severely the effects of the operation. He believed that many of the abdominal operations could be performed, but it was the after consequences that they had to fear. He had never opened the abdomen except in castration, and he had seen this most cruelly done; perhaps he had done it in a cruel manner. Occasionally, when they had to operate, they placed one hand up the rectum; they had only one assistant, who took half the dung off, and then in went that arm into the rectum. However, the patient got up and probably did well. In another case they might take the greatest care, and yet the patient died—not of the operation, but from dietetic treatment, and so on.

The HON. SECRETARY said that he was present at Birmingham, and he also read the paper. He was never more surprised in his life, after seeing some of the specimens, to think that such operations could be performed on the abdomen of the horse. He did not really believe them possible. He saw one specimen. The flank of a horse had been opened, an intestine taken out, an incision, perhaps, six inches long, made, stitched up, and the whole intestine had healed perfectly. A specimen was also shown in which Murphy's button had been introduced. A section was made in the gut of a horse, a piece taken out, the two pieces of the gut had been joined by a button, and the horse passed the button. He was sorry to say that Professor Macqueen's horses died, but he had an excuse for each of them; but whether they died or not, that was a beautiful and successful operation, and there was every reason to hope in the future for the success of these operations. It was not for them to concern themselves with the theoretical part of the operation. What affects them most of all was the practice. Two months since he was himself in a muddle. He operated on a colt, and immediately afterwards,

before he got up, the man told him that the colt was blown. He put stitches into it and led it up, but as soon as it was up he saw that the intestines were through. He left instructions for it to be watched, but he was soon fetched, and found the animal in great pain. He reduced the hernia, but the colt died, as he, of course, expected. He thought how peculiarly they had to reduce this hernia. After he had once passed his hand in, he could not for the life of him get the intestine back until he had made an incision in the internal abdominal ring. That was a case, of course, in which no other operation would have been successful, but in case of ordinary strangulated scrotal hernia, why not make an incision in the flank and reduce the hernia from the inside? In simple cases we can reduce it per rectum. Why not tap a distended gut with a trochar and canula, and reduce the hernia from the inside? Just the same with rigs. Why not operate directly from the flank instead of tearing a hole, and breaking through the scrotum and abdominal ring? There was no reason why that should not be done, the wounds healed. Why not open the abdominal cavity of a horse under antiseptic conditions, and carry out the treatment with the same precautions? He had seen rig operated on, and never saw a bigger piece of butchery in his life, and he would never attempt to operate for rig in a similar way. He thought they were perfectly justified in opening the abdominal cavity. He remembered a case of a horse in that town which had reared up and come down on some palings, and made a hole straight through. He could put his finger into the abdominal cavity. He had the wound strapped round, applied antiseptic treatment, and in a fortnight the wound was perfectly well. Mr. Bower spoke about feeding. It took a long time to starve a horse. A horse could take a certain amount of nutrition without putting the twitch on or drenching them with this or that. If they left their patients alone without this extra food or nutrition, they would do a great deal better than if it were forced upon them. In the case of abdominal injuries, his line of treatment was to start the poor brutes on opium, and give them nothing to eat until he was satisfied that they were recovering. The bowels did not want to be put into an extra state of activity, and he liked to keep the bowels as quiet as possible. It was difficult indeed to carry on one's operations under purely antiseptic treatment, and they knew how they had to go about spaying pigs, examining a horse's teeth, then cutting a litter of pigs and so on, and they went at it without thinking any more about antiseptic than any other man. He went to operate on a litter of pigs for a man in his district. Just as he was about to close the hole out came a little piece of intestine. His assistant shut up the pig's leg rather quickly, and the intestine came on to his knife and out came some ingesta. He stitched it up and the pig lived. Pigs suffered all sorts of severe injury to their intestines and seemed not at all liable to peritonitis, and in some cases, whether of a pig, colt, or ox, they knew that the mischief was more or less septic. It might be said that in going from one case to another, as they did, they were sure to introduce some septic material. There was a certain amount to be expected, but in the country there was not half the amount of septic material in the atmosphere, and on their hands or instruments, that there would be in towns, and they had a better state of affairs to deal with. If he could positively assure himself that an animal had an obstruction or a calculus that could only be removed by operation, he would not hesitate for a moment to operate. The difficulty they had to contend with, which was generally recognised, was that when they diagnosed the animal was as a rule dying, and if death took place they put it down to the operation rather than to the condition of the animal. (Mr. Bower: If we do not our employers do.) Although good might come from that discussion, and from abdominal surgery, it was a fact that although

they had to treat their patients to the best of their ability, they dare not perform these operations until they knew that the animal could not get any better, and that anything else was hopeless.

Mr. TURTILL said that he was rather free with operating and he liked to cut these poor animals about, especially when left alone. He narrated an amusing instance of a farmer's wife, who had seen a veterinary surgeon open a cow's abdomen, making an incision six inches long in a cow with a calving knife. She scooped out the contents of the stomach with her hand and then left the animal until her husband came home, who sent for him. He put his arm down between the stomach and the abdominal wall and got the stuff out that had fallen there. He had no catgut sutures and therefore put in some stitches in ordinary thread, and the hole healed up until it was only about the size of a farthing, and gases passed through this hole for some time. He had operated in two or three such cases, emptied the stomachs and the animals had got on all right. There was no comparison between operations on the ox and the horse. They spayed heifers up to two years old and could pull them about anyhow. He had pulled at them until he thought he should pull the back to pieces. It was different with horses. As to the antiseptic treatment if they kept their hands and finger nails clean and introduced them into a clean horse they would not do much harm. In operating on rigs they must have a dependent orifice and they kept their fist there until the horse got up when he closed it. In regard to scrotal operations the hand must be worked up the natural canal and this was the only way of doing it properly. If this path was missed they had to tear one way or another, and got a collection of pus. If they kept their fist there the bowel would be prevented coming into the canal and when the horse got up it would keep in its place. He had a case of a horse with strangulated hernia and the gut came through. He operated. It so filled the cavity that he could not get his fingers into the inguinal ring but he eventually pulled it through. The horse got well and worked for three years after.

Mr. BARR said that in regard to the administration of chloroform in operations, was it not one of the best antiseptics applied directly to the wound? Would not chloroform applied to the nose have a general antiseptic effect by destroying germs in the blood or which had gained access to the blood?

The PRESIDENT of the Royal College, rising at the invitation of the President, said it was a real treat to come into a county where one heard the opinions of practical men alone. He looked upon Norfolk not alone as a breeding county of a very excellent class of horses, but of animals in general, more particularly of the ox tribe. It was therefore interesting to hear their opinions because he knew that they came from men who had made experiments, and who did not merely quote college authors or works which they had read. The subject of abdominal operations was undoubtedly a very large one. The members of the National Veterinary Association at Birmingham were a whole day discussing it. He quite agreed with Mr. Shipley, sen., that he was right in introducing it, and though the paper of Professor Macqueen was really private to the National Veterinary Association he was sure the Professor would feel not only flattered but grateful that the matter had been introduced to so many practical veterinary surgeons, because the more the subject was ventilated the more popular would it become and the more were they likely to learn from its discussion. Unquestionably the veterinary surgeon did labour under an extraordinary amount of difficulty in regard to the antiseptic treatment advocated in the paper. He pointed out to Professor Macqueen at Birmingham that his operations in abdominal surgery were upon healthy animals. Every animal that he operated upon was kept for a certain time. Professor Macqueen in answer to that objection said that he did not keep these animals for any particular reason,

or in order to prepare them in any particular way, but that the season of the year he selected for these particular experiments was especially cold, and he kept them in order to select a favourable day for the operations. That was all right, but if abdominal surgery was to become general by veterinary practitioners, could they delay their operations. Take for instance the excision of twelve inches of the small intestine referred to in the paper. In the first place they had to decide whether it was 12 or 24 inches of intestines which had not only become inflamed, but had perhaps gone on to mortification, and then they had to decide upon the right time for operating. He therefore agreed with the hon. Secretary, who said that they were not justified in resorting to these operations until every other remedy had been tried. In the case of this excision of 12 inches of the small intestine, what did the operation consist of? Opening the abdomen under the most favourable circumstances in a farmyard, perhaps he might say a stinking farmyard. They arrived at the conclusion that it was necessary to perform the operation at a time when perhaps they had not even an ordinary assistant with them. There was no time to call in the aid of professional brethren who resided in neighbouring towns, there was 12 inches of the small intestine badly inflamed, which must come off in order to bring about recovery. They had therefore to cast the animal, open the abdomen, and remove this length. Then they were asked to have full confidence in the operation of joining the two ends together by means of a button, which they had to leave the horse to get rid of as best he could through the ileo-cœcal valve. Those who know more of that valve than others would be able to work out the problem how he was to get rid of this indigestible button. One thing he was struck with at Birmingham, after inspecting the specimens, was the absence of adhesions after the operations. Many of them were under the impression, if they had had any experience of abdominal surgery, that after cutting into any serous sac that operation would be succeeded in time by a certain amount of adhesion. There were adhesions after the simple operation of spaying the pig when indignant owners who occasionally lost pigs through extensive adhesions of the intestines declared that the operator had sewn the intestines to the side of the animal. He was very much struck too with the manner in which the ends had united where a six or twelve-inch excision of the large intestine had been made. It was simply marvellous. He thought that Professor Macqueen had occasionally to refer to the fact that abscesses formed in the muscular tissue after operation, but in the cases that he inspected at Birmingham he saw nothing like a serious amount of adhesion between the bowel and the abdominal parietes. On the contrary he was struck by the absence of it. Gentlemen who were not members of the National Association would be glad to know that Professor Macqueen urged them not to include the muscular coat of the bowel in the operation but in all cases to secure the serous coat, and the serous coat of the bowel and the healing of the muscular coat would certainly follow. He hoped that the introduction of so important a subject as this at the National Veterinary Association meetings would be a proof to those who had not already joined that Association of the extremely valuable character of the papers produced by it. When he told them that it had been decided by those who were responsible for the conduct of the National meeting not to publish these papers or the discussions they would see that it was necessary for those who had not joined the Association to do so if they wished to profit by such papers. They would find that ten shillings was well spent in becoming a member. In referring to the difficulties of abdominal surgery, when he asked them to consider Professor Macqueen's advice in these cases he should perhaps say that he forgot how many instruments he advised they should have ready by them, and how they should be kept before operation. The Professor

recommended that they be kept in a closed oven until they were likely to be wanted, and then he suggested that they should have threaded as many as twenty-four needles for an operation. They must also wash and shave and disinfect the skin. They could therefore judge how extremely difficult it was for them to perform laparotomy and enterectomy. He believed, however, that what Professor Macqueen had done had given them encouragement to go on, and the greatest credit was due to him for it. He had demonstrated that there was not that extreme danger in operating, certainly upon healthy animals, by cutting into the abdominal cavity which they certainly once supposed to exist, and as time went on they would be able to demonstrate to themselves through meetings of that kind, and to their fellow practitioners, that a good deal could be gained by the introduction in the first place of the paper by Professor Macqueen at the National Association, and seconded by the very excellent remarks of the Hon. Secretary.

Mr. SMITH quoted from an old volume of *The Veterinarian*, dated 1828, an interesting case bearing on the subject. It was given by Dr. Cheselden, who stated that "a cow was suffering from constipation of the bowels." Thomas Brayer, a doctor of cattle, opened the ox in the flank, and took out a great part of its bowels, upon searching which he found there was a perfect stoppage in the guts, and the gut was about the stoppage putrified for three quarters of a yard, whereupon he cut off so much of the gut as was putrid and took it quite away, and then drew the ends of the guts which remained sound after what was cut off, together upon a hollow "keck," which was about three or four inches long, and sewed the said ends of the guts together upon the said "keck," leaving the "keck" within the guts, and then sewed up the whole cut in the hide upon the flank of the ox. Within the space of one hour after this operation the ox dunged, and the pieces of the "keck" that the said ends of the gut were sewn upon came away with the dung, whereupon the ox recovered and lived to do the owner service several years.

Mr. W. SHIPLEY, sen., said he hoped Professor Macqueen would not object to his introducing the subject. He had no idea of criticising his paper in any shape or form, and if he had in any way encroached upon his province he hoped the Professor would overlook it. So few of their members attended the National meeting at Birmingham that he thought that it would be a good thing to introduce it not only to hear their opinions but to show them how necessary it was to belong to such a good Society as the National Veterinary Association. He had heard that the National was to hold their 1896 meeting in the Eastern Counties, and he hoped every member of their own Society would make it their aim and object to attend. If one and all joined it, it would be a grand thing for the profession at large.

The PRESIDENT said that he had never performed any of the operations which had been mentioned, but he had heard of them, notably one case 22 years since. He castrated a good many colts in the season and he only had had one case in which the bowel came out. He was castrating a great three-year-old colt and after he got up he found six or seven yards of bowel under his legs, and he therefore took his gun and shot the colt. They had had some interesting speeches and he moved a vote of thanks to Mr. Shipley, sen., for introducing the subject, and to the President of the Royal College for his contribution to the discussion.

Mr. BOWER seconded and the vote was passed unanimously.

After brief acknowledgments a similar vote to the President closed the business proceedings. The members subsequently took tea together with their wives and lady friends, thus pleasantly closing a most enjoyable meeting.

ABDOMINAL SURGERY.

BY PROFESSOR J. MACQUEEN, F.R.C.V.S.

The numbers refer to a list of references given at the end of the paper.

(*Continued from page* 219.)

The forward direction of this incision is opposed to all teaching, but its advantage is conceivable. The upper hind limb is unhobbled and drawn backwards. The wound gapes and exposes the internal oblique muscle, which is then cut with scissors in the direction of its fibres. A similar opening is made in the transversalis. The third wound exposes a layer of fat which is lined by peritoneum; this is pierced with the finger, and the opening is enlarged with scissors in the direction of the transversalis wound.

Incision and Suture of the Bowel.—In Félizet's case the gut was opened two fingers' breadth from the mesentery. So far I have only opened the bowel at the middle of the longitudinal band—where the wall appears strongest and most capable of supporting sutures. With sharp-pointed elbowed scissors the gut can be punctured and the wound extended without the slightest difficulty. The wound is closed with sutures of prepared Chinese twist No. 1. There are many methods of suturing bowel wounds, but Lembert's is the only one of which I have experience. Sutures applied by Lembert's method pass through both the serous and muscular coats; the mucous membrane must not be punctured. The needle enters one-quarter inch from wound, passes through muscle for one-eighth inch, then pierces serous one-eighth inch from the edge of the wound. It is then carried across the wound, reinserted one-eighth inch from edge, passed through a muscle for one-eighth inch, and brought out one-quarter inch from the wound. A glance at the diagram (Fig. 3) will enable anyone to understand the course of the needle. The sutures are placed one-eighth inch apart and tied separately. The ends are shortened to within one-quarter inch from the knots. Degive has improved this method by making the sutures continuous.

Operation.—Cast the horse on left side, and give chloroform. Wash, shave, and disinfect the flank. Spread sponge cloths, wrung out of carbolic lotion (5 per cent.), in front and behind area of incision. Incise skin and external oblique; unhobble upper hind limb, draw it backwards, and fix to a post or wall. Douche wound with warm carbolic lotion (2½ per cent.), and stop bleeding from skin and muscle. With elbowed scissors slit internal oblique muscle in the direction of its fibres, trim the edges, and stop bleeding. Snip transversalis with scissors, and extend opening with finger, taking care not to puncture fatty layer or peritoneum. Examine wound and check bleeding. Sponge with warm carbolic lotion (2½ per cent.), and remove excess of fluid. When satisfied that the wound is "dry," rinse the hands, push the finger through fat and peritoneum, and enlarge opening with blunt-pointed elbowed scissors. Pass a large sponge, wrung out of (2½ per cent.) warm carbolic solution into abdomen, and get tarlatan ready. Pass the hand into abdomen, bring out the bowel, and hold it gently until assisant has placed pieces of tarlatan, moistened with warm carbolic lotion (2½ per cent.) round the wound. This done, let the assistant take the bowel between his fingers applied like clamps, the hands resting one in front, the other behind the wound. Incline the bowel towards the horse's thigh, and slit the free border with scissors. Remove contents, and wash its mucous lining. With a fresh sponge clean the edges of the wound, and apply Lembert's sutures. Place the stitches one-eighth inch apart, and insert two or three beyond the wound at each extremity. Pass all the sutures before tying any. Wipe the edges as tying proceeds, and shorten the suture ends to one-quarter inch from the knot. When the wound has been closed, pull the bowel well out of abdomen, and let assistant renew his hold. Carefully sponge off clots, hairs, and suture

ends, and douche with boiled water that has been allowed to cool to about 106° F. Remove packing from round the wound, let the bowel slip into abdomen, and withdraw the sponge. Look inside, and, if necessary, pass in a fresh sponge to take up clots or fluid. Adjust the edges of transversalis wound, and excise protruding fat. Pass two or three sutures (twist No. 3) through internal oblique muscle, and sponge the surface with carbolic lotion. Re-hobble upper hind limb, and bring edges of external oblique together with a few fine sutures. Close the external wound with strong (No. 6) twist sutures passed through skin and muscle, tied in front or behind the line of union. Then slit skin and fascia downwards and backwards to two inches from lower end of first incision. This will drain the operation wound. Sponge the surface with carbolic lotion, and let the horse rise. Dust the flank with iodoform and tannin, insert aseptic tow in drainage wound, and cover the whole with carbolised cotton, protected with four layers of gauze. Support the dressing by winding calico round the body, and roller bandages secured with safety pins. Muzzle the horse for five or six hours, but leave his head loose. Encourage, but do not force, exercise. For a few days restrict his diet, which ought to be somewhat laxative. Dressings should not be renewed until oozing occurs; then re-dress, but do not plug the drainage wound. The dressings might be substituted with advantage by a pitch plaster or a mild blister.

Notes of Cases.—a. An aged brown pony gelding in poor condition; purchased three weeks before operation. Feeds well, but masticates imperfectly. Urine normal in appearance. February 15th.—Temp. 99·4°; pulse weak, 36; resp. 6. 16th.—Temp. 99·7°; pulse 36; resp. 6; skin washed and disinfected. 17th (date of operation):—Temp. 99·1°; pulse 36; resp. 6. 11.15 a.m.:—Pony cast, fixed, and chloroformed (three ounces consumed during operation). Hair removed from under part of abdomen, and skin disinfected with hot (5 per cent.) solution of carbolic acid. Incised linea alba for five inches through skin, subcutis, and fibrous tissue to fatty layer, of which a piece was excised. The peritoneum was pinched up with forceps, punctured with scissors, and cut the full length of superficial wound. A loop of floating colon was withdrawn, and incised along the muscular band for three inches and a half. Blood oozed from the edges, but this was soon stopped by warm sponges. The wound was closed with twenty-two fine silk and six chromic gut sutures, applied by Lembert's method. Having tied the sutures and shortened the ends, the bowel was sponged, tested for leakage, and replaced in the abdomen. The bowels underlying the wound were swabbed, and the abdomen was closed with eight strong silk interrupted sutures, passed through the whole thickness of the wall from peritoneum to skin. The wound was further secured by seven fine silk stitches, placed in the skin between the strong sutures. Temperature at close of operation 95·2°F.; half an hour later 94·8°, and in ten hours it was 103°. The wound was dusted with iodoform and tannin, and covered with carbolised wool and gauze maintained in place by roller bandages.

18th.—Morning: temp. 102·7°; pulse imperceptible; resp. 14. Had moved about a little; eaten nothing, and passed fæces three times. Evening: temp. 101·7°; pulse cannot be felt; resp. 12; seemed lively; had eaten part of a mash; no symptom of pain. To have hyposulphite of soda in next mash.

19th.—Morning: temp. 102·3°; pulse 33, weak and intermittent; resp. 30 and blowing; mucous membranes dull red; discharge showing through bandages. Has eaten very little. Continues to defæcate; mucus on fæces, which contain whole oats. Wound re-dressed. Evening: temp. 103·5°; pulse 52; resp. 24.

20th.—Morning: temp. 103·6°; pulse 60; resp. 50, blowing a good deal; shows difficulty in swallowing, throat painful. Ordered simple electuary

dressing adjusted. Evening: temp. 105·2°; pulse 80; resp. 44. Applied mustard to throat; continued electuary. Refused a mash of steamed oats and linseed, but at midnight very little mash remained.

21st.—Temp. 105·2°; pulse 80; resp. 32. Has eaten some hay. Noon: uneasy, stepping backwards occasionally. [Fear adhesion of bowel to abdominal wound.] Dressing examined and found dry. Slight discharge from nose; breathing laboured, breath fœtid. Evening: had been down; shows symptoms of colic; had drunk a bucket of water; tries to tear the dressings. Later: still symptoms of pain; no improvement; punctured abdomen in front of wound. No effusion. Ordered morphia. Temp. 104·2°; pulse 80; resp. 96.

22nd.—Morning: temp. 106°; pulse 104; resp. 80. Blowing, sweating, and very uneasy. Breath very offensive. Will neither eat nor drink. Wound still dry. Noon: destroyed by chloroform.

Autopsy.—Wounded part of abdominal wall excised and examined; sutures intact; cutaneous edges united in some places; peritoneal edges closed and puckered, surface bright red and omentum adhering slightly to wound. Removed wall and exposed viscera fully: omentum, traced to stomach, unaltered; no fluid; peritoneum—parietal and visceral—glistening and apparently healthy. Floating colon examined; operation wound found four feet from double colon. Serous coat in front and behind sutures marked by small bright red patches. Colon was now tied in two places and contents forced against the sutures; no leakage. All but four sutures intact. Four chromic gut sutures missing. At this place wound was slightly opened by traction on serous membrane, when oozing of a milk colour appeared. Mucous membrane at wound appeared retracted and roughened. Stomach, small intestine, cæcum, and double colon healthy and more or less full of ingesta. Kidneys and liver normal; spleen marked by a few raised spots; bladder empty. Heart: ventricles show incipient endocarditis. Left lung enlarged by septic pneumonia, and at one place putrid. Right lung similarly altered at apex. Both contain a few hard tubercles.

b. Chestnut pony gelding about eight years old.

April 20th.—Temp. 100·2°; pulse 33; resp. 9. 21st.—Morning: temp. 99·7°; pulse 32; resp. 9. Cast pony and gave chloroform (six ounces and a half consumed). Shaved and disinfected right flank. Incised skin and external oblique downwards and slightly forwards. Wound seven inches. Unhobbled upper hind limb and drew it backwards. Broke through muscles to peritoneum, and checked bleeding and disinfected wound. Opened peritoneum with scissors and withdrew loop of floating colon. Incised the gut at muscular band for about three inches, and removed fæces. Washed the bowel and applied twenty-four Lembert's sutures of Chinese twist No. 1. Shortened ends; douched and returned bowel. Did not stitch peritoneum. Sutured abdominal muscles separately with carbolised gut, and closed the skin with strong twist. Inserted a rubber drainage tube, and dressed the wound with iodoform, carbolised cotton and bondages, as in Case *a*. Temperature at close of operation, 98·5; five hours later temp. 101·4°, pulse 44. Ordered sedative electuary and laxative diet.

22nd.—Morning: temp. 101·5°; pulse 35; resp. 16. Had passed fæces during the night. Looking well. Evening: temp. 101·9°; pulse 30; resp. 12. Condition promising.

23rd.—Morning: temp. 101·9°; pulse 54; resp. 16. Fæces coated with blood and mucus. Re-dressed wound and removed drainage-tube. Evening: temp. 132·8°; pulse 38; resp. 24, slightly blowing.

25th.—Temp. 101·9°; pulse 38; resp. 42. Re-dressed wound and discontinued bandages. Evening: temp. 102·9°; pulse 40; resp. 42. 28th.—Temp. 101·2°; pulse 36; resp. 44. Coughing; symptoms of catarrh. 29th.—

Temp. 99·8°; pulse 36; resp. 36. Re-dressed wound as before. May 1st.—Temp. 101·6°; pulse 36; resp. 20. Dusted wound with powdered boracic acid. May 3rd.—Temp. 99·8°; pulse 42; resp. 16 Convalescent; wound to be dusted occasionally with antiseptic powder. May 13th.—Temp. 101°; pulse 34; resp, 14. Destroyed by chloroform.

Autopsy.—Cutaneous wound healed except at lower extremity; peritoneal wound closed; transversalis and internal oblique wounds obliterated by fibrous tissue. An abscess existed within the external oblique muscle. Pressure forced pus through the unhealed extremity of cutaneous wound. Sutures secure, but somewhat relaxed. Colon examined for operation wound. which was found with difficulty two feet from double colon. Serous surface concealed by adhesion to colic mesentery. Somehow the gut had turned on its long axis and united with its own mesentery. Wound of mucous surface almost closed. All other viscera apparently normal.

c. Aged brown gelding, 15·2 hands, broken winded. May 10th.—Temp. 99·5°; pulse 30, irregularly intermittent; resp. 10. 11th.—In afternoon, immediately before casting, temp. 101°; pulse 38; resp. 9. Thrown and chloroformed (nine ounces consumed). Washed, shaved, and disinfected right flank. Incision seven inches downwards and backwards, subsequently extended for about three inches forwards and downwards. Unhobbled upper hind leg and drew it backwards, slit internal oblique and transversalis muscles in the direction of their fibres, and stopped all bleeding. Then pushed finger through fat and peritoneum, enlarged opening, passed hand in and brought out loop of small colon. Incised gut at muscular band to about three inches, removed fæces, cleansed the lining and applied twenty-one Lembert's sutures of prepared twist No. 1. Suture completed, the bowel was well washed with warm water and returned to abdomen. Closed muscular wounds with a few interrupted sutures of fine twist, and the skin with fifteen sutures of No. 6 prepared twist. Temperature 100·4°; breathing laboured. Wound dressed and bandaged as in other cases.

May 12th.—Temp. 102·4°; pulse 54; resp. 34. 13th.—Temp. 103°; pulse 52; resp. 28; wound re-dressed. 14th.—Temp. 102·6; pulse 50; resp. 32. 16th.—Temp. 102·8°; pulse 72; resp. 16; symptoms of influenza, mucous membranes dull red, eyelids swollen, lips and sheath œdematous; frequently backing against the wall. 17th.—Temp. 102·7°; pulse 44; resp. 16; re-dressed wound; still shifting legs and moving backwards; œdema increased. 18th.—Considerably easier. 20th.—Temp. 101·3°; pulse 54; resp. 16; wound re-dressed. 22nd.—Temp. 100·6°; pulse 50; resp. 12; removed bandages. 27th.—Temp. 100·3°; pulse 48; resp. 24 (increased respiration probably due to excessive heat of that day); otherwise horse much better. 28th.—Out of danger; wound to be dusted occasionally with iodoform. Observation discontinued. Horse to be exercised every day. June 11th.—Destroyed by chloroform.

Autopsy.—Wound of skin healed except at drainage opening. Abscess within panniculus communicating indirectly with the drainage track. Deeper muscles closed; peritoneal surface attached to base of cæcum. Omentum adhered to surface of wound in colon. Mucous wound cicatrized. (After operation a small forceps was missing, and this instrument was found encapsuled and attached to the left abdominal floor.) All the viscera—except the liver, which was spotted—appeared healthy.

ENTERECTOMY.—Excision of part of the intestine.—This operation is indicated in some cases of invagination, "twist," or strangulation that cannot be reduced. Successful operations in cattle have been recorded by Brayn, Meyer, and Taccoen; and in dogs resection of the bowel experimentally has frequently been performed.

In operating on the small intestine of the horse, the abdomen may be

opened at the flank or near the linea alba. The bowel is brought out and clamped in front and behind the obstruction, care being taken to apply the clamps over sound bowel two or three inches from the strangulated part. Within two inches of the clamps, along a line near to the attachment of the diseased segment, the mesenteric vessels are tied; the bowel is then detached from its mesentery, divided at two places, and removed. The continuity of the gut is restored by continuous or interrupted sutures passed through serous and muscular coats of the inturned ends. The mesentery from which the bowel has been separated is carefully folded to the right or left, and secured by sutures of fine twist placed at the borders of the fold, or a piece of mesentery can be excised and the edges united by continuous suture; but whether folded or excised no gap should be left between mesentery and bowel. If clamps are not employed, the ends of the gut should be drawn over a piece of trachea or decalcified femur, and the edges inverted before applying the sutures. To protect the wound and support the sutures, Senn suggested that a bit of omentum should be applied and stitched to the bowel. But stitches are unnecessary, as the omentum readily adheres to the wound. In the human subject, continuity can be attained by lateral implantation and by lateral apposition as well as by end-to-end approximation. In the first, the posterior end is closed by continuous suture, and a hole is cut in the side of the bowel. The anterior end is then passed for an inch into the opening, and fixed by sutures. In the second, anastomosis is effected by means of Senn's perforated bone plates, or slices of raw turnip. The ends of the gut are turned in and closed; each is then slit open at the side about two inches from the end, and a bone plate or a slice of turnip to which sutures have been attached is inserted through the opening. The sutures are then passed through the wall of the gut and tied together to maintain the serous surfaces in apposition.

A metal "button," designed by Dr. Murphy of Chicago, has been recently introduced for intestinal approximation in man.

Many advantages have been claimed for this contrivance. Reading of its successful employment by many surgeons at home and abroad induced me to give it a trial in the horse. I procured the largest button made for the human subject, and soon found my opportunity. The horse was cast and chloroformed, and the usual antiseptic precautions were observed. The abdomen was opened two inches to the left of the linea alba, and the jejunum was brought outside. The bowel was divided, the ends and mesentery were secured by a running thread—according to Murphy's directions—and the button was inserted and closed. The abdominal wound was sutured, dressed, and bandaged.

The temperature after operation was 95·5°, and four hours later it was 102·9°. Early next morning symptoms of abdominal pain appeared. Temp. 103°; pulse 36, wiry; resp. 24. The patient was uneasy, looking round to his flank, lying occasionally, and rolling over slowly from one side to the other. These symptoms continued without aggravation till death, which occurred thirty-nine hours after operation. On removing the skin, an abscess with inspissated contents, lying against the peritoneum, was discovered in the right flank. This had not been observed at the operation. The abdomen contained more than a gallon of turbid fluid, and the bowels were congested throughout. Murphy's button was secure, the peritoneal surfaces adhered but were not united. The bowel in front of the button was blocked and distended for nine inches, and behind the button the bowel was empty. The mucous membrane of the distended portion was inflamed, but in front and behind the obstruction, it was normal. The liver was soft, flabby, and very pale; the

spleen, kidneys, and heart appeared healthy, and the lungs congested. The abdominal wound was satisfactory, muscular incisions closed, cutaneous sutures all in position. No sign of suppuration.

RUMENOTOMY (LAPAROGASTROTOMY).—Incision of the rumen and abdominal wall.—The origin of this operation is unknown. Probably it was suggested to an operator who had experienced difficulty in treating tympanites, to enlarge the punctured wound, and remove some of the contents of the distended stomach.

D'ARBOVAL (No. 50) mentions that Chabert (1781) had met with many cases of foreign body in the rumen and reticulum of cattle, and that extraction had been effected by incision of the left flank; and GOHIER (No. 51) reports that Saloz operated on a cow in 1828, and removed a buckskin glove from between the pillars of the œsophageal groove. It is doubtful if hair-balls in calves have been removed by rumenotomy, but it is certain that wool-balls have been extracted from the fourth stomach of lambs. LEBAS (No. 52) performed rumenotomy on lambs. He incised the left flank and rumen; introduced the thumb and index-finger through the paunch, reticulum, and omasum into the abomasum, withdrew the concretion, and closed the gastric and abdominal wounds by appropriate sutures. Lebas confesses that, while his patients appeared somewhat improved, they did not long survive the operation. All his experiments failed—a result in great part attributable to imperfect surgical methods.

For the extraction of foreign bodies from the stomach of cattle, gastrotomy was successfully performed by Obich, in 1864, and by SCHWARZ (No. 53), in 1871; and, as bearing upon this point, I would refer to four cases reported by Mr. SANTY (No. 54), of Norwich, in 1874. In each case Mr. Santy diagnosed foreign body and advised slaughter. Subsequent examination discovered a piece of wire netting in one, a pin in another, and wire in the others. Had these cases been treated, as they might have been, by operation, rumenotomy would have advanced considerably in professional estesm.

To relieve plenalvia, the condition for which rumenotomy has been mainly performed in this country, STEEL (No. 55), of Biggar, operated successfully on a cow in 1834. Youatt, while commending Steel for his decision in the case, discourages the operation, and advises the speedy preparation for the butcher of any beast "whose paunch had been distended to any considerable degree. . . ." This note of warning, appearing as it did in one of the volumes issued by The Society for the Diffusion of Useful Knowledge—works widely read then, and, as some think, too often consulted now—rather hindered surgical interference in many cases. Horsburgh, in the *Veterinarian* for 1842, complains of Youatt's advice, and of its tendency to damage veterinary practice by encouraging owners to sell sick cattle rather than risk treatment; and states that he never hesitates to operate, and in no case has he seen the least apparent bad result, either as to calving or feeding. In this communication Horsburgh gives particulars of his first rumenotomy (1836). He incised the left flank two inches below the lumbar transverse processes, and extended the wound downwards for five inches; fixed the stomach to the abdominal wall, and passed his hand through rumen and reticulum, and, as far as possible (half-way) into the omasum. To prevent passage of food into the peritoneal cavity, he sutured the rumen, muscles, and skin together; and covered the wound with adhesive plaster and a bandage.

Since 1842 few cases of rumenotomy have been recorded. One is given in vol. vi. of the *Edinburgh Veterinary Review*, and another in the *Veterinarian* for 1894. This remarkably meagre list would seem to show that rumenotomy is seldom performed, or that the operation is generally satisfactory.

Diagnosis.—The symptoms of plenalvia are well-known. Those which indicate the presence of a foreign body in the reticulum, as recorded by Santy, may be quoted with advantage, because Santy's diagnosis was verified in each case by *post-mortem* examination. "The symptoms of foreign agents impacted in the reticulum . . . are, partial or complete loss of appetite; rumination partly or wholly suspended; bowels regular and fæces natural. The animal has a dull, anxious look, expressive of continuous pain. He stands, as a rule, but when lying, does so on the left side; the nose is generally poked out, ears thrown back; the coat is staring; an occasional grunt is heard, which is much increased by the animal being moved about, or percussed on the right side. Percussion on the right side also causes pain, and gives a duller sound than natural; auscultation shows that the respiratory murmur is less distinctly heard on the right than on the left side. There is no cough, and the respiration is very little disturbed. Indeed, there is an absence of any definite disease rather than otherwise." (*Veterinarian*, vol. xlvi., p. 462.)

The operation need not be described, but a few points, sometimes discussed, may be noticed. The flank should be clipped and disinfected, then incised downwards and slightly forwards. To prevent peritoneal contamination by food, the stomach should be fixed to the abdominal wall before or immediately after opening the rumen. A strong suture passed through the last intercostal space and tied over the last rib, will maintain the stomach in position while the lower angle of the gastric wound is being secured. The stomach should be closed by Lembert's sutures of strong prepared twist; the muscular wounds by continuous and the skin by dossil sutures supported by a pitch plaster.

It remains to be said that the results of rumenotomy are not always gratifying. In aged animals, especially when operation for impaction has been delayed, recovery may be protracted, and in milch cows extremely unsatisfactory, because of the lessened secretion of milk.

Cæsarean Section (Laparohysterotomy).—The extraction of the fœtus through wounds made in the abdominal and uterine walls.—This operation is indicated, though not always performed, when delivery by the natural channel is impossible in consequence of insurmountable maternal or fœtal difficulty. Introduced with the object of saving the young, the operation at first was only carried out on the dead female. Improved methods and increased confidence, as well as the desire to relieve suffering, suggested the operation on the living with the hopo of saving both mother and young. But in human practice few surgeons were bold enough to undertake an operation which had been condemned as cruel and unchristian, and some of those who performed it did not care to own their work, probably because the result had always been fatal. In one city, still famous for the achievements of its surgeons, not a single case was successful in a hundred years, and at Milan sixty-two operations yielded only three recoveries.

It is interesting to note that, according to Dr. Greig Smith (No. 56), one of the earliest successful Cæsarean sections was performed in 1500 by a sow castrator, who, being dissatisfied with the efforts of thirteen midwives and several surgeons, operated on his own wife and saved both mother and child. Before the employment of antiseptics and modern methods the mortality of Cæsarean section was seldom less than between 75 to 80 per cent.; but since 1860 the results have become more and more commendable (No. 56).

Recommended by Brugnone and Bourgelat, Cæsarean section has occupied a place in veterinary practice since the early part of this century. The operation as recorded has been performed fifty-one times altogether—on five mares, twenty-one cows, seven sows, two ewes, and seventeen bitches. Of the mares three were killed, one died, and one survived. Eight of the cows died, seven were killed immediately or soon after operation, and six recovered. Six of the

seven sows recovered, and of the bitches four died and thirteen recovered from the operation. Franck, quoted by FLEMING (No. 57), mentions forty-eight cases, twenty-five of which were unsuccessful; and St. Cyr and Violet in their *Traité d'Obstetrique*, 1888, give a summary of forty-one cases with twenty-eight deaths. These statistics, it must be confessed, are not encouraging, and at first view tend to hinder rather than promote confidence in the operation; but closer examination will show that most of the reports belong to a time antecedent to the employment of antiseptics in veterinary practice.

Recently *Cæsarean Ovarohysterectomy*—or extirpation of the uterus with its appendages—has replaced to a large extent the older operation in human surgery. Within the past twenty years this operation (No. 58) has been performed nearly 300 times, with favourable results in from 40 to 50 per cent. of the cases. In 1768 the possibility of removing the gravid uterus in animals was proved experimentally by CAVALLINI (No. 59) of Florence, who operated on dogs and sheep; and similar experiments were performed by Drs. Blundell, Fogliata, Porro, and Rein. In veterinary practice MACORPS (No. 60), a Belgian veterinary surgeon, and FESER (No. 61) have successfully excised the uterus in pregnant bitches. Although no English veterinarian has recorded a case, I may state that laparohysterectomy has been performed in this country, and more than once with unqualified success.

In performing Cæsarean section, chloroform should be given, and the flank should be prepared and incised as in laparotomy. The incision should measure, according to the case, from five to sixteen inches. Having exposed the womb, it should be incised on its upper surface, and the wound extended by probe-pointed scissors. The fœtal membranes if still intact should be ruptured; and to prevent soiling of the peritoneum a piece of mackintosh cloth should be spread over the lower part of the abdominal and uterine wounds. If the cord can be reached it should be tied and divided before the fœtus is removed. In the bitch, as suggested by Degive, advantage will be gained by bringing the womb as far as possible out of the abdomen before incising the horn. After extracting the fœtus the membranes should be separated and withdrawn through the vagina if possible. The uterine wound should be closed by Lembert's sutures; this done, the womb and adjacent viscera should be douched with warm water that has been boiled. Excess of fluid is then removed by aseptic sponges, and sutures are placed in the abdominal wound, which is subsequently dressed and bandaged in the usual way.

In hysterectomy, excision has been effected by the ecraseur and by the knife, with ligature of strong twist secured by a Staffordshire knot. The stump may be allowed to drop back into the abdomen, or it can be sutured with the wound of the flank, and a few days afterwards set free.

HERNIOLAPAROTOMY.—Abdominal section for the relief of hernia.—"Guttie," or pelvic hernia in oxen, is the condition for which this operation has been most frequently performed. At one time cases of "gut-tie" were not uncommon, but since 1863 very little has been heard of the disease. In 1795 Mr. HARRIS (No. 62), a Herefordshire farmer, in a communication to the *Repertory of Arts and Sciences*, blames the erroneous method of castrating calves then pursued in Herefordshire as the chief cause of the production of the hernia, and endeavours to explain how the accident occurs. He states that "the part which is tied is the jejunum at its turning from the left side to the right; there the bow of the gut hangs over the bow of the *vas deferens*, which by a sudden motion of the beast forms a hitch or tie of the string." Harris operated on animals from three months to nine years old. He opened the left flank under the third lumbar vertebra, introduced his hand, and divided the cord with a small curved ring knife, like that sometimes used in embryotomy. For pelvic hernia the operation has been performed by CORBET (No. 63); MEGINNIS (No. 64); ANKER, of Berne (No. 65), 44 cases; VINE

(No. 66); CROWHURST (No. 67); WALKER, of Rugby (No. 68); and by STRAUSS (No. 69), who operated on 110 cases and saved 99. Walker had 14 recoveries in 19 operations.

HARRIS (1795), ANKER (1839), and WALKER (1858), describe the operation. From Walker's description I take the following:—"The animal, placed in a stall, is kept standing with his right side against the wall, and the hind legs tied together above the hocks. An incision is made on the left side, midway between the antero-inferior spinous process of the ilium and the last rib, in a line with the fibres of the internal oblique muscle, through skin, muscles, and peritoneum, large enough to admit the *left* hand, which is then passed upwards and backwards over the rumen to the right side, where the strangulated part may readily be felt. A small probe-pointed bistoury is then introduced, and the vas deferens divided. Having ascertained that the strangulated bowels are entirely liberated, three or four interrupted sutures should be passed through skin, muscles, and peritoneum, and the animal released."

GASTROCENTESIS.—Piercing the rumen for the relief of tympanites in cattle and sheep has been practised in all countries since very early times. The operation performed with trocar and cannula through the left flank is familiar, simple, and generally successful. A few cases have been recorded in which puncture was followed by peritonitis induced by the escape of gastric contents into the peritoneal cavity.

In 1838 it was suggested (No. 70) that gastric tympany in the horse might be relieved by puncturing the stomach with a long curved trocar and cannula passed through the abdominal floor; but I have not been able to find the report of a single case treated by this method. Gastric flatulence is not a rare condition in horses, but I doubt if the stomach—even when distended and somewhat displaced—can be safely reached through the abdominal wall. In other operations with the trocar there is some degree of certainty that the instrument will directly pierce a cavity or a dilated viscus, but in attempting gastric puncture in the horse the flexures of the colon, and perhaps the spleen, would probably be encountered on the way. The danger of the operation lies not with the stomach, but with other viscera which might be transfixed by the penetrating trocar.

PARACENTESIS ABDOMINIS.—Tapping the abdomen for the evacuation of ascitis or other fluid.—This operation, which is neither difficult nor dangerous, though rarely required in horses, cattle, or sheep, has been frequently performed on dogs. Palliative rather than curative paracentesis gives the patient ease, and sometimes lengthens life. The puncture may be made in either flank. The linea alba should be avoided, because punctured wounds of that part heal slowly. An instrument of small calibre should be employed. In operating on the dog a many-tailed bandage will be found useful to supply counter-pressure as the fluid escapes. Having removed the hair and disinfected the skin, the bandage is applied, and a "window" cut at the seat of operation. The trocar or aspirating needle should be pushed slowly into the abdomen. There is little risk of wounding the bowel, which is generally anæmic and retracted. The escape of fluid may be interrupted by omentum, gut, or solid particles. Whether all or only a part of the fluid should be removed at one tapping is sometimes discussed, but the question is of little moment. With the bandage well adjusted all the fluid may be withdrawn—perhaps with advantage. When carefully secured, the bandage to some extent retards re-accumulation, if it does not altogether prevent it. For this purpose, or to arrest the secreting power of the serous membrane, injections of a weak solution of iodine, as recommended by Leblanc more than fifty years ago, have been used successfully by ST. CYR (No. 71) in three cases of ascites in dogs. Of this treatment by injections I have no experience.

In connection with paracentesis I should mention that uterine and ovarian

dropsy has been relieved by tapping through the flank. STEEL of Biggar (No. 72) removed 102 quarts of fluid from the uterus of a cow, and W. FIELD (No. 78) operated twice on a mare, and withdrew altogether eight gallons from an ovarian tumour.

ENTEROCENTESIS.—Puncturing the bowel in tympanites.—Vegetius (4th century) recommends abdominal puncture in the treatment of strophus or pain in the belly. (No. 74.) He says:—"But in this distemper by frequent wallowing the horse nourishes and increases the wind within himself and contracts a tympany . . . which distemper, if you would for ever remove, you shall perform the operation of tapping in this manner:—About four fingers' breadth under the navel towards his yard in the middle region of the belly you shall thrust in the lancet so as you may not only open the skin, but also the peritoneum itself . . . after you have taken out the lancet you shall thrust in the pipe which farriers use to carry about with them."

It is doubtful if the "pipe" was passed into the bowel, because in prescribing a similar operation for dropsy Vegetius cautions the operator not to "touch the intestines and kill the animal."

Enterocentesis was mentioned by Markham in 1656, and was practised for the relief of tympanites in horses by Roem of Dresden, in 1776. Bourgelat and Chabert (1781) operated through the rectum, and Barrier and Herouard—somewhat later—through the right flank. For many years after its introduction, enterocentesis was viewed with much apprehension because of the occurrence of abscesses between the muscles of the abdominal wall and of the frequent deaths, which were often attributed—rightly or wrongly—to the operation. VATEL (No. 75) expressed the fear that peritonitis might be induced by the use of the instrument; and Chabert warned intending operators of the danger of inhaling the mephitic gases, advising the injection into the rectum of "antiputrid" substances—perhaps the earliest suggestion of the employment of antiseptics in veterinary practice. Somehow the operation lost ground and fell into desuetude until 1834, when it was revived by Professor Bernard at Toulouse, and soon after by Rey at Lyons, and by Chabert in Paris. Numerous experiments were made to prove that the horse's bowel could be punctured without danger, and that the formation of abscesses at the seat of operation could be prevented by attention to cleanliness.

In this country the operation was revived—if not performed for the first time—by STEWART of Glasgow (No. 76) in 1836. But Stewart's limited experience, while it startled a few, failed to convince many. The old conservative treatment of flatulent colic prevailed; and even Stewart's enthusiasm was lukewarm, for he remarks in words as appropriate now as then:—"That an operation performed in France is not exactly the same to us as an operation performed in this country." Progress was slow, and complaints of competition were seldom made. Always busy in those days, veterinary surgeons did not encourage new-fangled operations. But treatment must vary with advancing knowledge. Since 1850 enterocentesis has gradually gained the confidence of practitioners everywhere as a ready, harmless, and frequently successful means of relieving tympanites in the horse. The symptoms of the condition are familiar; but sometimes one meets with a case in which the abdomen is much distended, and yet no gas can be found with trocar and cannula. In torsion of the large intestine, when hæmorrhage into the substance of the bowel has occurred, blood may escape from the cannula. The operation, if it fail to relieve distension, may assist diagnosis; more than once a horse has been promptly destroyed when blood instead of gas spurted from the cannula, and in every instance *post-mortem* examination revealed a hopeless condition of the large bowel.

The seat of operation is the right flank, but the left may be punctured. Rectal puncture, abandoned soon after the decease of Chabert, has been

recently revived by FOHRINGER and IMMINGER (No. 77); against this method may be urged the risk of peritonitis from septic contamination, but with a small and clean trocar the objection may be disregarded. The flank operation, however, is simple and safe.

The complications which attended enterocentesis many years ago were probably caused by want of care in selecting and cleansing the instrument. Trocars of excessive size and in all conditions were employed; and perhaps some of the unsatisfactory operations of the present day might be explained after examination of the instrument. The trocar and cannula, beyond the the handle, should be somewhat flattened, and should measure roughly 6 inches by 3-16 inch. It should be warmed and disinfected before, and cleansed and again disinfected after the operation. In operating it is advisable to disinfect the skin and to remove the hair, but I must confess to having operated frequently without preparing the skin. To prevent the gut from slipping off the cannula, Brogniez, in 1843, designed an enterotome, which has, however, received little commendation. When employing a fine trocar and cannula I invariably first puncture the right upper flank; and if no gas escape, re-introduce the trocar four to six inches below the first puncture. In many cases I have punctured both flanks at several places, and in one horse I punctured the right flank in seven places without complication. Beginning at the upper flank the trocar may be safely introduced at intervals of a few inches downwards behind the last rib to the abdominal floor. I refrain from naming the bowel, because in flatulent colic sometimes one and sometimes another part of the gut is distended and in contact with the flank, and to wait until one can ascertain which bowel is most dilated is neither advisable nor advantageous.

The effects of the operation, when successful, are at once apparent; gas escapes, distension subsides, respiration becomes easier, pain disappears, and the patient recovers.

Before withdrawing the cannula some practitioners pour medicine into the bowel, but the practice is not always free from risk.

The treatment of umbilical, ventral, and scrotal herniæ; Oöphorectomy, and the castration of abdominal cryptorchids must be left to a special paper by another writer. But to strengthen my case for the encouragement of peritoneal surgery, reference should be made to spaying—an operation which until 1850 was always performed through the flank or the liaea alba. Passing by the operation on the sow, which dates from the time of Aristotle and of Pliny (A.D. 73), the cow and mare have been castrated since the seventeenth century. OLIVIER DE SERRES (No. 78) describes the operation; and Bartholin, a Danish anatomist, gives particulars of the practice as pursued in Denmark in 1631. From this time the spaying became more or less general in France, Prussia, and Denmark. In 1717, because of its effect upon horsebreeding and some less important objections, the castration of the mare except in special cases was prohibited in France. In Enlgand spaying was practised in the eighteenth century. Boardman's Dictionary, published in 1804, contains a note to the effect that John Lawrence had seen an advertisement sixty or seventy years old of "Grass for Spayed Mares"; and King, of Stanmore, in 1829, states that he has read and heard of filly foals having been spayed with safety.

The castration of ewe lambs, to hasten fattening and to improve the wool, was first practised by DAUBENTON (No. 79), in 1768; and the *Veterinarian* for 1831 contains a description of the operation by J. Fulton, who states that he has operated on 2,500 ewes. The operation on the cow was revived in 1831 by Thomas Winn, a hotel keeper at Natchez, U.S.A. Winn had read that at ploughing matches in the southern counties of England the prizes were generally adjudged to the ploughmen who worked spayed heifers. A year

later, Levrat, of Lusanne, "anxious to repeat the experiments made in America," operated on three cows, to ascertain if spaying really increased or maintained the secretion of milk. The result was sufficiently satisfactory to induce others to try the operation, and to extend its practice. Charlier, of Rheims, in 1850, after two years' experience of spaying through the flank, introduced the operation *per vaginam*—the method by which the cow and mare are now usually castrated.

I desire to acknowledge my indebtedness to Professor McFadyean for facilities placed at my disposal; to Messrs. Harrison, Hoole, and Dowell for valuable assistance at the operations; and to Mr. H. C. Reeks for his kindness in making the drawings.

References.

ABDOMINAL INJURIES.

No. 1. *Veterinarian*, Vol. I., p. 354.
„ 2. *Dictionnaire de Médecine de Chirurgie et d'Hygiène Vétérinaires*, 1838, Tome I., p. 525.
„ 3. *Veterinarian*, Vol. XV., pp. 642 *et seq.*
„ 4. „ „ X., p. 207.
„ 5. *Veterinary Journal*, Vol. XI., p. 128.
„ 6. *Veterinarian*, Vol. XVIII., p. 139.
„ 7. „ „ XX., p. 325.
„ 8. *Veterinary Journal*, Vol. XI., p. 129.
„ 9. *Veterinarian*, Vol. XXVI., p. 205.
„ 10. „ „ XXVII., p. 33.
„ 11. „ „ XXVIII., p. 694.
„ 12. „ „ „ p. 695.
„ 13. „ „ „ p. 214.
„ 14. „ „ „ p. 386.
„ 15. „ „ „ p. 579.
„ 16. „ „ XXIX., p. 318.
„ 17. „ „ „ p. 77.
„ 18. „ „ XXXIII., p. 212.
„ 19. „ „ XXXIV., pp. 569, 70.
„ 20. *Edinburgh Veterinary Review*, Vol. III., p. 656.
„ 21. „ „ „ IV., p. 767.
„ 22. *Veterinarian*, Vol. XXXVI., p. 731.
„ 23. „ „ „ p. 606.
„ 24, 25. *Möller's Operative Veterinary Surgery*, translated by Jno. A. W. Dollar; Edinburgh, 1895.
„ 26. *Veterinarian*, Vol. XIII., p. 615.
„ 27. „ „ XXIV., p. 425.
„ 28. *Edinburgh Veterinary Review*, Vol. IV., p. 786.
„ 29. *Möller's Operative Veterinary Surgery* (Dollar's translation).
„ 30. *Veterinarian*, Vol. VII., p. 149.

LAPAROTOMY.

No. 31. *Veterinarian*, Vol. II., pp. 491, 492.
„ 32. *D'Arboval's Dictionary*, 1838, p. 528.
„ 33. *Revue Vétérinaire*, 1877.
„ 34. *Proceedings of the National Veterinary Association*, 1887.
„ 35. *Journal Comp. Pathology and Therapeutics*, 1894.
„ 36. *Veterinary Record*, August, 1894.
„ 37. *Recueil de Médecine Vétérinaire*, May, 1895.
„ 38. *Veterinarian*, Vol. I., p. 263.
„ 39. „ XII., p. 680.
„ 40. *Veterinary Journal*, Vol. XI., p. 129.

LAPAROTOMY.

Nos. 41, 42. *Möller's Operative Surgery* (Dollar's translation), p. 285.
„ 43. *Annales de Médecine Vétérinaire*, 1870.
„ 44. *Berliner Thierärztliche Wochenschrift*, 1894.
„ 45. *Edinburgh Veterinary Review*, Vol. VI., p. 724.
„ 46. *Diseases of the Dog*, Steel, 1888.
„ 47. *Revue Vétérinaire*, 1877.
„ 48. *Annales de Médecine Vétérinaire*, 1892, p. 577.
„ 49. *Möller's Surgery* (Dollar's translation).

RUMENOTOMY.

No. 50. *D'Arboval's Dictionary*, 1826, Vol. I., p. 342.
„ 51. „ „ 1838, „ p. 583.
„ 52. *De L'Elevage et des Maladies du Mouton*, BENION, 1874, p. 333.
„ 53. *Veterinarian*, Vol. XLIV., p. 365.
„ 54. „ „ XLVI., p. 460.
„ 55. „ „ VII., pp. 98, 99.

CÆSAREAN SECTION.

No. 56. *Abdominal Surgery*, Fourth Edition, 1891 (Dr. Greig Smith).
„ 57. *Fleming's Veterinary Obstetrics*, 1878.
„ 58. *Abdominal Surgery* (Dr. Greig Smith).
„ 59. *British Medical Journal*, January, 1884.
„ 60. *Edinburgh Veterinary Review*, Vol. IV., p. 620.
„ 61. *Fleming's Obstetrics;* and *British Medical Journal*, January, 1884.
See also *Veterinarian*, Vol. XIII., pp. 121-127, p. 267, and p. 405.
„ „ „ XXIV., pp. 184 and 309; Vol. XXIX., p. 698.
„ „ „ XXXI., p. 460.

PELVIC HERNIA.

Nos. 62, 63. *Veterinarian*, Vol. VII., p. 313 and p. 265.
„ 64, 65. „ „ XII., p. 676-680.
„ 66. „ „ XXX., p. 696.
„ 67, 68. „ „ XXX., p. 369 and p. 304.
„ 69. *Möller's Surgery* (Dollar's translation), p. 268.

GASTROCENTESIS AND PARACENTESIS ABDOMINIS.

No. 70. *D'Arboval's Dictionary*, 1838.
„ 71. *Chirurgie Vétérinaire*, Vol. I., p. 513. Peuch et Toussaint, 1887.
„ 72. *Veterinarian*, Vol. VII., p. 267.
„ 73. „ „ XX., p. 550.

ENTEROCENTESIS.

No. 74. *Vegetius Renatus*, Book I., chap. 43; Book III., chap. 25, 26.
„ 75. *Elemens de Pathologie Vétérinaire*, 1828, p. 297.
„ 76. *Veterinarian*, Vol. IX., p. 317.
„ 77. *Möller's Operative Surgery*, p. 277.

SPAYING.

No. 78. *Theatre d'Agriculture*, 1600.
„ 79. *Instructions to Shepherds*, 1768.
See also *Veterinarian*, Vol. XXXIV., pp. 115-121.
„ „ „ VII., p. 569.
„ „ „ VIII., pp. 629 and 690.
„ „ „ XI., p. 497-503.
„ „ „ XXI., pp. 392-402.
„ „ „ XXIV., p. 219.
„ „ „ XXVII., pp. 230-283.
„ „ „ XXVIII., p. 449.

THE BACTERIA OF MILK.

DR. ROWLAND recently reports in the *British Medical Journal* (August 3rd, 1895), the result of an extensive examination which he has made of the milk supply of London. In twenty-five samples of milk examined bacteriologically, the average number of bacilli found per cubic centimetre was 5,000, equal to a little less than two million per dram. This is somewhat less than the number found in other investigations which have been made. That the number of bacteria found was so great is not to be wondered at, since Sedgwick found 30,500 microbes per c.c.m., or 122,000 per dram, in freshly-drawn milk; and Kohn has shown that germs may multiply at the rate of doubling every hour, thus producing, in three days, the inconceivable number of 4,772,000,000,000,000. The wonder then is, not that milk contains so many microbes, but that it contains so few. As regards the sources of these germs, we quote as follows:—

"Whence comes this extraordinary number of bacteria? It is not difficult to imagine their source if for a moment one recalls the usual conditions of the cows in even the cleanest and most hygienically managed of our dairies. The stable or cowshed in which the milking is usually carried on is itself saturated with excremental matter, the very straw the animals stand upon is too often but an incubating ground for micro-organisms; for, warmed by fermentation and saturated with fecal matter, it offers all the conditions of warmth and nutriment material for their best growth. The restlessness of the animals and the walking of the milkman disturb at each moment myriads of these micro-organisms, some of which, passing into the open pail, find in the warm milk all the conditions for life and active multiplication. That this is not an exaggerated picture will be evident when we state that fully ninety per cent. of the organisms found are the bacillus coli communis, the common inhabitant of all excremental matter.

"Other sources of infection are to be found in the dirty hands of the milker, unclean dairy utensils, and in the insecurity and carelessness commonly employed for the transit of the milk from the dairy to the consumer."

Of the various germs found, the bacillus coli communis was most abundant, constituting about ninety per cent. of all, indicating, at once, the fact that the milk was contaminated with the fecal matters of the cow, since the original home of this microbe is the colon of mammals. When found in water, this microbe affords evidence of sewage contamination. When found in milk, it means simply that some of the manure of the cow has found its way into the milk pail.

With reference to the possibility of excluding these germs, to which blood-poisoning, abscess, pleurisy, pneumonia, peritonitis, appendicitis, and even attacks similar to typhoid fever, have been traced, we again quote from Dr. Rowland as follows:—

"It may be objected that it is practically impossible to take such care that the colon bacillus can be absolutely excluded; undoubtedly it is, still it is an imperative duty which must be carried out if we are to have anything like a sterile milk supply. It may again be objected that a bacillus which is present normally in the intestines of the most healthy of us can do no possible harm if introduced from without. Such a contention would not for a moment hold good. It is a very different thing to possess a normal quantity of a certain constituent, and to possess a quantity that is abnormally large. It might with equal justice be argued that, because we already possess indol in our intestines, this is a desirable article of food, or that because we possess blood corpuscles therefore it is a good thing to have our vascular system crowded with them; but we all know that too many corpuscles are just as injurious as too few; and the same applies to the colon bacillus. Besides, it has been clearly shown that many of the milder forms of disease are closely dependent on the presence of abnormal quantities of the bacillus coli communis. It will

be sufficient to mention, among many others, its determining action in many cases of cholera nostras (Gilbert and Girode), cholera infantum (Lesage), cholecystitis (Charrin and Roger), etc. In fact, its *rôle* in abnormal quantities is by no means a small one, and its presence in milk, especially in such milk as might possibly be used for infant feeding, cannot but be a grave source of danger."

As regards reforms necessary to secure protection against the microbes of milk, the writer suggested the following:—

"1. That all milking be carried on in the open air, the animals and operators standing on a material which is capable of being thoroughly washed, such as a floor of concrete or cement. Such a floor could be easily laid down in any convenient place which can be found. The site chosen should be removed from inhabited parts as far as possible, and should be provided with a plentiful water supply. Only in this way does it seem possible to avoid the initial contamination with the colon bacillus.

"2. That greater care be expended on the personal cleanliness of the cows. The only too familiar picture of the animal's hindquarters, flanks, and side being thickly plastered with mud and fæces is one that should be common no longer. It would not be difficult to carry out this change; indeed, in the better managed of our large dairy companies' farms such a condition no longer prevails, but in the smaller farms it is but too frequently met with.

"3. That the hands of the milker be thoroughly washed before the operation of milking is commenced, and that after once being washed they be not again employed in handling the cow otherwise than in the necessary operation of milking. Any such handling should be succeeded by another washing in fresh water before again commencing to milk.

"4. That all milk vendors' shops should be kept far cleaner than is often the case at present. That all milk retailing shops should be compelled to provide proper storage accommodation, and that the counters, etc., should be tiled."

It is not probable that these painstaking precautions will be carried out to any extent, at least in connection with public milk supplies, for many years to come; consequently, we must manage to get along the best we can with our germ-infected milk, and must adopt, as a measure of precaution, the uniform practice of sterilizing the milk, either by Pasteurization, heating it to a temperature of 160° F. from fifteen to thirty minutes, or by boiling for the same length of time.

ABSTRACT OF PAPER ON CONTAGIOUS OR EPIZOOTIC ABORTION.

BY HARRY OLVER, F.R.C.V.S.

At various times, and in different countries, the causes of sporadic abortion already given have been advanced to account for the apparently ever-increasing scourge in our herds, but no single one or all of them put together can satisfactorily explain it, and I believe the theory of contagion or infection must prove the true one. For very many years the belief that some specific organism or virus was responsible for the disease has been held by practical men; but our scientists will not be satisfied until they can isolate the microbe, and be able to assert positively that that and that alone produces the trouble. Such an investigation is now being conducted at the London Veterinary College on behalf of the Royal Agricultural Society of England. Scientists in other countries are also working on similar lines, and I hope the time is near at hand when the question of contagion may be definitely settled.

Personally, long before I became a member of the profession, I felt quite satisfied that the disease was a contagious one, consequent on an unfortunate experience on my father's farm in Cornwall. He was a breeder of Hereford cattle, and for fresh blood went into Herefordshire, and bought some in-calf heifers. Soon after one aborted, others followed, and for years after we scarcely had a live calf in spite of isolation and other care. My father subsequently took another farm thirty miles away, and the cattle went also. On this previously untainted ground abortion continued, proving that not the land, building, or locality was at fault, but that the herd carried the disease with them. Similar instances are very numerous, and can be quoted *ad nauseam*.

It is true that we have no evidence of the disease being in existence in wild cattle, nor have we any reason to believe that the virus has been conveyed to them. Many diseases are directly or indirectly the result of domestication, and were not known and probably did not exist in the primitive ages. Domestication in these days means, very largely, being artificial in everything—breeding, feeding, housing, milking, and so on. That this predisposes to disease there cannot, I think, be a doubt, and we are all aware that a weakened constitution invites disease, whilst a robust, healthy, active animal in a natural condition would repel it. From epizootic abortion in the present day it would, I think, be fairly safe to assume that no known cattle-producing country can be said to be free. Great Britain and Ireland are infested with it. All European countries, whether from the extreme north of Russia or to the south of Italy, tell the same tale. America, north and south, and our various colonies are also troubled; and if, as I assume, it is contagious, then its wide distribution cannot be wondered at. For in these days of rapid transit do not our cattle and those of other countries get sent to every part of the globe? and no class of animal is imported into a country so frequently as pregnant cows or heifers.

One thing, I think, we may safely assert, viz.: that climate, geological formation, breed, good or bad sanitary arrangements, or season of the year, have little or no effect on the prevalence of the disease.

Probably the first writer in this country to suggest the contagious nature of the affection was Youatt, in 1834, although Clater and others, at a much earlier date, had spoken of it as sometimes assuming an epizootic character, but had not, I believe, expressed the opinion that it was either infectious or contagious. Professor Barlow, of Edinburgh, in 1851, points out that "in all cases of abortion before and after the expulsion of the fœtus, there is a discharge of mucous and glairy fluid from the vagina, which he believed contained the virus of the disease."

According to Fleming's Obstetrics the disease was particularly active some years ago on the Continent. He says, "Henzé mentions that in the Neuvre (France), in 1869, the loss to certain agriculturists amounted to 30, 40, and even 50,000 francs." In South Germany, in 1851-2, Reuff says it was very serious. Zundel mentions that it is frequent in North Germany, and Harms describes its prevalence in Hanover, whilst Strebel, in the centre of Friborg, Germany, says from 20 to 60 per cent. of the cows aborted in the wet seasons of 1878-9. It would be difficult to estimate the percentage of abortion in this country without a proper census being taken, but in the large breeding district in which I reside, I think 20 per cent. of the whole would not be above the average.

I have already stated that from an early date I have been satisfied of the contagious nature of the disease, not only from the experience I obtained on my father's farm, but from a large number of similar ones that have come under my notice as a practitioner. In enquiring from most farmers who have suffered from the disease, one generally hears that they never had it until a

cow, bought from so-and-so, slipped, and they have never been free since; and I have no doubt this is the experience of most practitioners in country districts. One also finds, more often than not, that it is thought to be one of the ills that has to be borne, and except, perhaps, isolation for a time of the recently aborted female, no attempt is made at either treatment or prevention

A very marked instance of the danger of introducing pregnant cows into healthy herds is quoted by Professor Penberthy, in the enquiry instituted by the Royal Agricultural Society of England as to its contagiousness. He says, "In the summer of 1894, whilst investigating the circumstances connected with occurrence of abortion in a Jersey herd, I ascertained, amongst other facts, that the proprietor, a landowner, had farmed the estate for many years, but previous to the summer of 1893 had no experience of abortion in his cattle. In 1892 he sold a cow reared by him to a neighbour some few miles distant. In 1893 this cow was re-purchased and brought back to her original home; about a month after her return she aborted; after a lapse of some time her abortion was followed by that of her immediate neighbours on either side of the cowshed, and since abortion has gone on to a serious extent in the herd. No new cow or bull has been introduced except the cow sold in 1892 and re-purchased in 1893." The Professor found that abortion was exceedingly troublesome in the herd in which the cow had been located for a year.

To Professor Nocard, the eminent veterinary surgeon and director of the Alfort College, France, is, I believe, due the credit of first bringing the question of the contagiousness of abortion thoroughly to the front, and this after most careful study, research, and experimentation, both in the cowshed and laboratory. His investigations, which were undertaken at the instance of the Agricultural Department of France, were reported on in 1886-7, and the conclusions he then formed have been generally confirmed by other workers since in different countries.

M. Nocard gives a decided opinion that the disease is not one affecting the cow generally—her health seems unimpaired—but it is one affecting the genital organs only of the mother; mainly, it is a disease of the fœtus and its membranes. He bases these conclusion, 1st, on *post-mortem* examination of cows about to abort; 2nd, on *post-mortem* examination of cows on the point of aborting; and 3rd, on *post-mortem* examination of cows that had aborted the previous year, and had not since become impregnated. The outcome of these experiments was that samples of blood, milk, urine, etc., taken from a cow killed the same day, after aborting a five-months-old calf, was found to be normal; but fluid taken from the cotyledons and lining membrane of the uterus were found, when examined under the microscope, to contain large numbers of bacilli and micrococci. After forty-eight hours the broth cultivations produced the same organisms, whilst that from other portions of the cow did not produce any. Other *post-mortems* had the same results. Then a cow that had aborted several months, and had refused the bull since, was killed. Her viscera was also healthy; but the fluid scraped from the lining membrane of the uterus swarmed with living organisms, whilst the fluid was found to have an acid reaction; that of healthy cows is alkaline. The fluid from non-aborting cows of healthy herds was found to be free from any such organisms.

M. Nocard further failed to find micro-organisms in the genital organs of cows from districts unaffected with abortion, but invariably found them between the mucous membranes of the uterus and the placental membranes of aborted animals.

M. Nocard further extends his inquiry by making observations of calves. He did not find the micro-organisms of abortion in the blood, bile, spleen, liver, kidneys, etc.; but in the fluid of the stomach and intestines, as well as

on the medulla oblongata, he got cultures of the same micrococcus as was found in the Liquor Amnii, etc. In these investigations it was necessary to examine calves born dead, as micro-organisms are always found in the alimentary canals of animals that have had a separate existence. Thus the Professor demonstrates the presence of these organisms in the alimentary tract of fœtuses that have been aborted, but cannot do so in those from healthy parents.

After carefully studying epizootic abortion from an anatomo-pathological and bacteriological standpoint, M. Nocard concludes thus: "The autopsy of diseased animals does not reveal any alteration of the thoracic or abdominal viscera, with the exception of the uterus. The peritoneal serous membrane is normal. Incision of the uterus reveals the presence between the mucous membrane and the chorion of a fibrous muco-purulent matter, which is more or less abundant, and often acid, in which the microscope shows epithelial cells, leucocytes, a large number of isolated micrococci, which are generated or associated in short chains of three, four, or five sections, and a few short thick bacilli, which are isolated or associated in pairs. In the cotyledonous liquid the bacilli are predominant; in the product obtained by scraping the uterine mucous membrane, both organisms exist in almost equal number. The amniotic fluid also contains them. In the abortive young, the intestinal mucous membrane is the seat of abundant epithelial desquamation, its tissue seems infiltrated with various microbes which exist in abundance in the contents of the intestines. These micro-organisms which are obtained in the digestive tube give an explanation of the diarrhœa by which they are affected in the two or three days following their expulsion. These calves have been aborted in an advanced period of gestation. In the aborted young which bellow continually during the days preceding death, the medulla contains micrococci which are identical with those contained in the amniotic fluid."

In a subsequent communication, 30th Aout, 1894, M. Nocard alludes to the researches of Professor Galtier of an outbreak of epizootic abortion at Placis, the property of the Marquis de Poncius, and says the disease differed from the one he investigated at Nièvre, in 1885–6. He further says, "I have come to the conclusion that the outbreak at Placis is of a different type to that observed at Nièvre." Proceeding, M. Nocard says, "I wish to put on record an observation which shows that abortion may indeed be set up by several kinds of organisms"; alluding then to a special outbreak which he investigated. After careful autopsy of the aborted fœtus, and making cultures, he found he was dealing with a pure culture of the *bacillus coli*. He proceeds to say the disease then was the result of an infection of the fœtus by the bacillus coli, an infection from which the mother appeared quite exempt. How did the bacillus get to the fœtus? The fœtus was born dead—a secondary infection, *post-mortem*, could not be set up. It seems probable that the microbe had been able to penetrate the genital organs of the dam during decubitus, the lips of the vulva coming into direct contact with fæcal matter and liquid manure which had saturated the ground. The Professor says, after making *post-mortems* of more than thirty aborted animals collected from 1885 to 1892, he had not been able in them to find an organism having any resemblance to the bacillus coli. He sums up by saying that "whatever may come out of these investigations, there are two facts which prove, first, that in beasts, as in man, the bacillus coli may take on pathogenic characters and be of importance as being the chief factor in producing grave disorders, often followed by death. The second fact proves, further, that in the interior of organs the bacillus coli lives for a long time, and preserves all its special characters.

I have quoted largely from the reported researches of M. Nocard because it appears to me the result of his investigations, and the conclusions at which he arrives, are strictly in accordance with the experience of myself and others

who have seen a great deal of this disease as country practitioners; and in comparing his views with those of eminent veterinarians in different countries, there seems to be a general consensus of opinion that all the main facts of a clinical character point to the contagion entering by the vulva; also, I believe at present there is no one organism that can be charged with producing the disease: indeed, the latest researches suggest that more than one organism may be responsible, and if it is found to be correct that the bacillus coli may take on pathogenic characters, it may help other investigators to arrive at a "true conclusion." One thing it certainly will impose on all who have to advise on the treatment or prevention of the disease, viz.: strict cleanliness and disinfection.

Sabat has reported the history of an infectious abortion which existed in a flock of sheep in the Department of Ande. The flock consisted of 86 sheep, housed in a narrow, low, badly-kept sheep-fold. Within three weeks 15 aborted, without any known cause. Sabat, on being consulted, prescribed isolation of diseased animals, removal of healthy ones, change of shepherd, with disinfection and sponging of vulva, etc., and the disease disappeared.

That mares are also the subjects of epizootic abortion there appears to be but little doubt. In this country, where mares (except in comparatively few places) are not kept in large numbers together, it has not been much heard of; but Dr. Fleming, in the VETERINARY JOURNAL, gives particulars of very serious outbreaks in North and South America, Australia, France, etc. It is stated that in the Mississippi Valley, in 1889-90, the losses in some places were estimated at 75 per cent.; in others one-half cast foal; and throughout the country enormous loss was sustained. In 1891 the disease appeared in South America, where similar ravages appear to have been the rule.

In the outbreak of infectious abortion amongst mares in Montana, United States of America, inoculation experiments were made with cultures from the membranes and blood of an abortive fœtus, and were successful, not only in inducing abortion, but the foal of one which lived for a short time had disease of the knee and hock joints.

I think, therefore, that we may fairly assume that the contagious or infectious abortion of the cow has its counterpart in other domestic animals.

Acting on the assumption that the disease is contagious, then comes the all-important part, how to treat, and prevent; for treatment, we must bear in mind that the disease is one affecting the uterus and genital organs generally of the mother, and the fœtus with the placental membranes. On abortion taking place, the fœtus should be at once destroyed by fire or quicklime, or boiling water; the fœtal membranes removed and similarly destroyed; the womb to be irrigated once or twice a day with a dilute solution of carbolic acid or other disinfectant; the cow to be isolated and kept away from the breeding herd and fed; the tendency being to successive abortions. If, however, the cow is particularly valuable for breeding purposes, she should still be isolated, the uterus regularly irrigated for some weeks, and she should not be put to the bull for at least three months; and when served it should not be by the bull in general use in the herd, as there is pretty conclusive evidence on record that a bull serving a cow that has suffered from contagious abortion is liable to carry the disease to any healthy cow to which he may subsequently be used, the presumption being that the contagion remains on or about the penis of the male animal.

To combat an outbreak of abortion that had become established in a herd, thorough disinfection with isolation of the diseased animals is most important. First separate the pregnant from the non-pregnant cows, keeping all those that have aborted by themselves with separate attendant, empty each shed in turn, scrape the walls and floors, close up all the ventilators, and stove with chlorine or sulphur, swill the floors and drains with boiling water, and afterwards cover

with lime, limewash the walls and, after the re-admission of stock, let the floors and drains each day be properly cleaned and disinfected, the particular disinfectant used being, I think, of less importance than thorough doing. All cows, whether pregnant or not, if admitted into the sheds, should be daily sponged with a disinfectant about the tail, vulva, thighs, etc. By some authorities syringing out the vagina with the same disinfectant is advised. With pregnant animals this causes considerable straining, and I think in them it may be dispensed with, but to non-pregnant cows it certainly should be used. The administration of carbolic acid in half-ounce doses is also recommended once or twice a week in a bran mash. Some Continental veterinary surgeons have tried the subcutaneous injection of carbolic acid, but with uncertain results, and it appears to me that that agent given in the food is the better mode of administration. All newly-purchased cows should be put in a separate building, and if possible a separate premises, and kept apart until parturition has taken place, when they can be placed amongst the healthy stock if proved to be free from disease. It must not be forgotten that to clear a premises from abortion will probably take a year or more; patience therefore as well as thoroughness is required at the hands of the owner. It has been stated that the disease will of itself die out in the course of two or three years, if no fresh cows are introduced, the idea being that the virus becomes attenuated, or, perhaps more probably, the cows become immune. Under certain conditions it might be advisable to take this into consideration; but it must also be remembered that many cows that have suffered from the disease become sterile, and the length of time lost to the owner, and the increasing age and the consequent loss of value of the cow, are likely to militate against this course being adopted.

There are various formulæ given for the purposes of disinfection and sponging; carbolic acid one to fifty of water; a strong solution of sulphate of copper; and another very effective and inexpensive mixture is:—

Soft Water	2 gallons.
Hydrarg. Bichlor.	2½ drachms.
Hydrochloric Acid	2½ ounces.

In using these agents freely, it must not be forgotten that they are poisonous, and consequently dangerous to pigs, poultry, etc.

Mr. Pound, Government Bacteriologist, from experiments made in his laboratory, has discovered that chicken-cholera exists in Brisbane. This discovery is of importance from the fact that the Rabbit Commission came to the conclusion that the disease did not exist in the Australian colonies, and reported against the microbes of chicken-cholera being made use of for the destruction of rabbits on that account.

Hydrophobia.—Since the death at Hyde recently of the boy who had gone through a course of hydrophobia treatment, yet died of the disease, there has been a big crop of remedies brought forward. The last was revealed to the House of Commons on Wednesday, September 4th, when Mr. Farrell asked the Chief Secretary for Ireland whether he is aware that Philip Movern, of Glan, county Gavan, claims to possess a specific herbal remedy for the treatment of this disease which has resulted in the cure of thousands of cases since the days of King Charles I., and whether, having regard to the necessity of doing something to cope with the increase of rabies, the Government would cause an inquiry to be made into the efficacy of this remedy, with a view to its adoption and use in some central hospital in Dublin or elsewhere? Mr. G. Balfour replied that he must maintain the same attitude of cautious reserve which, to judge from the hon. member's question, had been observed by every Irish Government from the days of Charles I.

CONTAGIOUS DISEASES ANIMALS ACT, 1894.

COMBINED SUMMARY OF RETURNS for the four weeks ending September 14th, 1895.

ENGLAND AND WALES.

Pleuro-Pneumonia.	Swine Fever.	Anthrax.	Glanders (including Farcy).	Rabies.	Foot-and Mouth Disease.
None	Died ... 665 Slaughtered 5492 Total 6,157	Fresh Outbreaks 14 Animals Attacked 27 Died, including previous outbreaks, 32	Fresh Outbreaks 64 Horses killed 97 London, 45 outbreaks	Fresh Outbreaks 30 Dogs Killed 26 Dogs Died 4 Total ... 60 York, West Riding, 10 outbreaks	None

In Wales, of Swine Fever, 26 died, 220 slaughtered.

SCOTLAND.

None	Died ... 45 Slaughtered 318 Total ... 363	Fresh Outbreaks 2 Animal Attacked 5 Died 5	Fresh Outbreaks 5 Horses Killed 27 Lanark, 5 outbreaks	None.	None

IRELAND.

None	Died .. 92 Slaughtered 391 Total ... 483	Fresh Outbreaks 1 Animal Attacked 1	None	Dogs Killed 59 Cattle ,, 10 Swine ,, 2 Asses ,, 2 Horse ,, 1 Goats ,, 2 *Died.* Cattle 5 Horse 1 Dog 1 Total ... 83	None

Munster, 36 cases of Rabies.

Legal News.

ON 25th August, John Fudge, of Wincanton, was summoned for having unlawfully and wilfully used the name and title of veterinary practitioner.—Mr. T. D. Shaw prosecuted on behalf of the Royal College of Veterinary Surgeons, and Mr. J. T. Davies defended.—Mr. Shaw said that the prosecution was instituted by the college in order to protect the public. He handed in the authorised list of veterinary surgeons, in which the name of John Fudge was not to be found. He was instructed to emphasize the fact that the prosecution was not instituted by anyone in the district, but by the Royal College of Veterinary Surgeons. There would be a great deal of sympathy with Mr. Fudge, but if he took a little time, he would be able to qualify and practise veterinary surgery. He had not the slightest doubt of Mr. Fudge's ability to operate on the cattle of the district, but the public must be protected, and also the members of learned professions who took so much time and trouble to pass their examinations.—Inspector Greenwell, of the R.S.P.C.A., said that on March 28th, he was the prosecutor in a case of cruelty

against John Dowthy. He remembered the defendant, who was called to give evidence. He was asked by the chairman what his name was, and he replied, "John Fudge." The chairman then asked, "What are you?"—The chairman said that a great deal of importance was attached to that. He suggested that he might have said that Fudge was a veterinary surgeon.—Inspector Greenwell said that he was quite certain that those were the words, and Fudge replied that he was a veterinary practitioner. At the time witness understood that he was a registered veterinary surgeon.—The chairman said he did not recollect the occasion, but he should have imagined that after asking Fudge his name, and knowing of his experience in horses, that he (the chairman) might have said he was a veterinary practitioner. Cross-examined by Mr. Davies: He had not seen Mr. Fudge's sign-board. He had never seen any of Mr. Fudge's cards. All he knew was that he treated animals in the district.—Arthur Charles Coles, a reporter, corroborated.—Mr. J. T. Davies said that the case struck him as being somewhat of a harsh character, considering that the whole charge against his client was a statement he made in Court. He had never held himself out to the public by signs or anything else that he was a veterinary practitioner. Mr. Davies suggested that probably in answer to the chairman's second query, Mr. Fudge said that he was an unqualified veterinary practitioner, but that the last two words were the only ones heard. He could not prove that he said that, as Mr. Fudge could not go into the box, but if he did, he would not have come within the meaning of the Act of Parliament. He had not held himself out to the public as a practitioner. He ventured to say that the case did not come within the meaning of the Act, for it was, indeed, a very thin prosecution.—The chairman: It is.—If the Bench did think that the case came within the section, he had only to say that Mr. Fudge regretted that he unintentionally misled the bench.—The chairman said that the case should never have been brought into court. The evidence clearly stated that Fudge did say he was a veterinary practitioner, and he said so in a public place, for that court was a public place. He had used the title, and it had been circulated in the papers. That case should never have been brought forward, as there was no intention on the part of Mr. Fudge to deceive them or the public. He was responsible for what he said at the court, and therefore he would be fined 1s., each party to pay their own costs.

Army Veterinary Department.

The following transfers have taken place:—

Vety.-Major J. A. W. Woods, from Aldershot to Colchester.

Vety.-Lieut. G. K. Walker, from Okehampton to Woolwich.

Vety.-Major W. Gladstone accompanied 4th Hussars from Aldershot to Hounslow; Vety.-Capt. T. Marriott, 7th Dragoon Guards, Aldershot to Norwich; Vety.-Capt. R. W. Raymond, 8th Hussars, Aldershot to Leeds.

The following officers joined for duty at Aldershot on 16th inst.:—Vety.-Lieuts. T. W. Rudd, J. D. E. Holmes, and W. O. C. Dawson.

London Gazette, 3rd September, 1895.

W. O. C. Dawson, gent., to be Vety.-Lieutenant in succession to Vety.-Major Gillard, placed on temporary half-pay. Dated 4th September, 1895.

Moves and Departures.—Vety.-Capt. F. Joslen arrived at Colchester from Norwich with 1st Dragoon Guards. The undermentioned veterinary officers will embark in Transport "Victoria" at Portsmouth on the 10th inst.:—Vety.-Captn. K. Lees, Vety.-Lieuts. F. W. Shore and F. U. Carr, for a tour of service in India. Vety.-Lieut. Trydell, on return from sick leave of absence. Vety.-Lieut. W. E. Russell, for a tour of service in Egypt.

Extracts from Foreign Journals.

RUPTURE OF THE AORTA.—Professor Cadéac writing to the *Journal de Médécine Vétérinaire* says:—"Rupture of the aorta is one of the frequent terminations of all affections tending to weaken the resistance of the walls of this vessel, such as thrombosis, aneurism, atheroma, inflammation of the arteries, fatty degeneration. It takes place nearly always at the base of the aorta, about a centimètre above the sigmoid valves, on the right side, that is to say, in the pericardial sac; its dimensions may vary from 5 to 20 millimètres (5 m. = 1-fifth inch). The rupture may be circular, longitudinal or irregular; it occupies sometimes the centre of an atheromatous patch; its edges are jagged, infiltrated with blood or joined by a large clot. The causes of rupture of the aorta may be the casting and shackling of animals during surgical operations, accidental falls, violent efforts at traction, jumping, rapid running, fright, pulmonary emphysema, muscular excitement produced by certain alkaloids, anæsthetic injections of chloral. The rupture or tearing of the posterior aorta may proceed from many causes, such as, blows from without (a stroke from a pitch-fork), simple or double exostosis of the lower face of the vertebral column, verminous aneurisms, etc. Whatever be the cause that produces rupture of the aorta, the accident is always and rapidly fatal."

LONG-CONTINUED SYNCOPE CAUSED BY MIXTURE OF ANÆSTHETICS.—Writing to the same journal, M. Pécus reports as follows:—"In order to perform a surgical operation on a bull-dog, six years old, and weighing 15 kilos. (33 lbs. avoird.) I narcotised him with 4 centigrammes (6-10ths of a grain) of morphine and 15 grammes (1 gr. = 15½ grains) of chloral, as prescribed by Cadéac and Malet. The operation took 45 minutes, and during this period the patient showed no respiratory trouble due to the anæsthetic, but a quarter of an hour after it was over, and just when I was expecting the spontaneous awakening of the dog, respiration became irregular and jerky, and at last stopped altogether. I at once resorted to artificial respiration, but for a long time without any tangible result; at the end of an hour and a-half I observed slight fibrillary contractions of the muscles of the thighs; three-quarters of an hour afterwards the palpebral reflex returned, but it was only by subcutaneous injection of two milligrammes (3-100ths grain), of pilocarpine and strychnine, introduced after three hours and a-half of artificial respiration, and by regular drawing backwards and forwards of the tongue, that the reflexes of the cornea reappeared; then the dog began to stir again, to prick up his ears at the sound of his master's voice and to make efforts at inspiration. But inspiration become normal only at the fifth hour, and then the patient could stand upon his legs. He at once ran off to his master's house, distance about half a mile. He seemed to be none the worse for his five hours' syncope. This accident seems to be due to the impurity of the chloral used rather than to special sensibility to anæsthetics on the part of the dog. It is thus that operations supposed to be quite safe sometimes bring unpleasant surprises; the important thing is not to despair too quickly when one is obliged to have recourse to artificial respiration.

Notes and News.

HORSES AND THEIR FRIENDS.—There exists a mysterious sympathy which makes one animal attach itself to another of a different species, and no reasonable explanation has ever been suggested why a cat who hovers about a big training-stable, where half a hundred horses are kept, should attach itself to one animal and remain constant to it alone. This is an experience which many great racehorses have met with, not the least known to fame being

Best Man. Sometimes it is to a pony that a horse attaches itself. Robert the Devil had a friend of this description, but the great horse showed his affection rather cruelly, for he used to bite his little pal—not viciously, but hard enough, no doubt, to hurt. A pony used to nibble Bumptious' tail, which was a comically ragged affair when he first faced the starter, and showed traces of equine teeth. Silver Spur's pony was well known, and she was miserable without the little creature, being only tractable when he was with her. Much the same was the case some years ago with a mare owned by John Dawson, the elder. She had been frightened as a yearling, and was always so nervous that she could not do justice to herself on a racecourse. One day the idea of sending the pony with her to the start was hit upon. Permission to do so was obtained, the pony trotted down to the post with her, stood by her side until the flag fell, and this time the mare, supposing presumably that her friend had jumped off, galloped gaily on, and won in a canter.

Correspondence.

THE NATIONAL VETERINARY ASSOCIATION.

To the Editor of the VETERINARY JOURNAL.

DEAR SIR,—May I through your columns draw the attention of the Veterinary Profession to the Table appearing on following page, which gives at a glance the position of the National Veterinary Association from its commencement up to the present time, so far as its publications give us the information.

If we compare the totals of the years 1886-89 with those of the last four years, we shall be able to arrive at a pretty correct idea of the position of the Association during these periods. We cannot include the year 1890 because it was only a special one-day meeting held under difficulties which need not here be repeated, and the first three years of the Association's existence can hardly be taken into account as the expenses of the printing during those years was extremely light, owing to the liberality of Messrs. Hazell, Watson, and Viney, through the influence of the VETERINARY JOURNAL, but the postage was excessively heavy because every member of the profession was written to and asked to join the Association and attend its meetings during those years. We must also omit this year's results as they are still incomplete.

It will be seen the printing cost a little under £40 more from 1886-89 than from 1891-94, and this can be partly accounted for by the numbers of tables and woodcuts in the papers on "The Horse-Shoeing Forge;" "Some of the fatal Diseases of the Digestive Canal of the Horse;" "Inoculation;" "Some diseases of the Foot of the Horse;" but particularly to those beautifully executed plates illustrating "Some Contagious Skin Diseases of the Horse" which alone cost over £20. However, the printing, paper and type of the proceedings of the former years I think compare very favourably, at the price, with the miserably small type and bad paper of the last four years, which is very difficult to read; and the arrangement of the 1891 proceedings was not good, with which the publication committee evidently agreed, as they went back to the old arrangement the next year. In fact, so far as the arrangement of the proceedings are concerned, nothing has been altered beyond leaving out the names of the visitors attending the meeting of 1891-92. Thus I think we may say the printing has not improved, neither is it cheaper of late years, but the proceedings have reached the members much earlier than they used to do. I also notice the printing was done in Birmingham without, I am pleased to say, any member hinting—so far as I know—that it was removed with any sinister motive as was done when it was taken for convenience and cheapness (by tender) to one of the best printing establishments in England.

Year and place of Meetings.	Printing, Woodcuts and Stationery.	Postage and Telegrams.	Reporting.	Expenses of Meeting, Hire of Rooms, etc.	Advertising.	Clerical Help to Secretary.	Travelling Expenses of Secretaries, etc.	Dinner Guests.	Experiments, Research, etc.	Total Expenditure.	Total Receipts.	Balance in Hand.	Invested.	No. of Subs. Rec'd. Annual.	No. of Subs. Rec'd. Life.	No. of Pages in Proceedings.	No. of Members.	No. of attendances. Members.	No. of attendances. Visitors.	No. of New Members.	Died.	Withdrawn.	No. struck off the List for non Paying.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£										
LONDON, 1883	24 13 1	9 10 6	2 12 0	3 8 6	0 7 0		1 0 0			41 13 7	79 5 6	37 11 11		131	2	48	175	71	20				
MANCHESTER, 1884 ..	40 2 4	12 6 9	10 10 0		10 13 0		3 8 7			77 0 4	111 15 6	72 7 10		204		96	221	96	62	54	3	5	
BIRMINGHAM, 1885	56 8 0	13 2 0	8 0 0	3 5 5	1 15 0		4 16 0			87 17 5	118 2 6	0 10 5	100	215	1	121	273	71	30	61	4	5	
EDINBURGH, 1886	96 12 8	10 1 11	10 0 0	3 17 6	7 7 7	1 0 0				129 10 8	142 2 6	13 2 3		265		169	316	68	21	53	3	7	
PETERBORO', 1887 .. .	70 18 2	7 0 10	6 0 0	9 17 6	1 2 6		2 5 3		2 2 0	99 10 0	127 19 0	41 11 3		238		140	305	57	12	21	2	11	19
NEWCASTLE, 1888	73 4 0	6 3 0	10 0 0	7 6 0	1 15 0					98 18 0	151 11 0	94 4 9		27	1	158	300	66	30	44	10	9	30
LONDON, 1889	76 13 9	5 9 3	7 7 0	6 6 0	1 11 0		4 13 6			108 5 6	125 12 0	16 8 9	100	22	1	90	285	63	18	13	2	8	18
TOTALS OF 4 YEARS, 1886-9	317 8 7	38 15 0	33 7 0	27 7 0	11 6 1	1 0 0	6 18 9		2 2 0	436 4 2	547 5 0		100	1000	2	557	1206	254	81	131	17	35	67
LONDON, 1890 . .	45 3 5	5 19 0	12 3 6	4 17 0	0 16 6	1 1 0	4 19 6			76 7 4	230 13 6	119 5 11		331		88	276	39	6	4		13	
DONCASTER, 1891	62 4 6	13 16 5	20 0 0	17 16 0	3 14 0	5 7 2	2 11 3		5 5 0	131 5 4	180 3 9	164 4 4		333		102	283	63	*	22	2	8	3
GLASGOW, 1892	70 18 6	9 10 9	16 16 0	5 5 0	5 2 0	7 14 0	3 15 0			129 3 6	128 14 8	167 15 7		232		124	291	68	*	50	5	14	20
MANCHESTER, 1893 ..	75 10 10	15 6 10	15 17 0	9 14 5	7 10 0	8 0 0	3 7 0	10 0 0		153 10 11	126 16 9	144 3 9		234		101	310	87	33	31	3	2	7
LONDON, 1894	68 17 10	11 0 0	19 7 0	5 5 0	1 3 6	3 0 0	3 8 8		13 9 6	125 14 3	139 9 5	157 18 11		241	1	143	321	90	19	29	3	6	9
TOTALS OF 4 YEARS ..	277 11 8	49 14 0	72 0 0	38 0 5	17 19 6	24 1 2	13 1 11	10 0 0	18 14 0	539 14 0	575 4 8		nil.	1040	1	470	1205	308	52	158	21	39	59
BIRMINGHAM, 1895																94	310	69	20	26	8	9	20

* Not recorded.

Formerly the postage was decidedly cheaper, as was also the reporting which I venture to say has not improved with the increase of expenditure of late years. The expense of hire of rooms and advertising have also increased, so is the Secretary's help, although I think we ought to congratulate ourselves that our worthy Secretary has not utilised all the funds placed at his disposal for this purpose. The travelling expenses have somewhat increased although this may be more apparent than real owing to some of the expenses being omitted in former years. As to the expenses of dinner guests this seems only to have increased one year. Altogether the total expenditure for 1891—94 has exceeded that from 1886—89 by over £100, whilst the receipts have only exceeded those of former years by £28. Strange to say, only 40 more subscriptions have been collected from 1891—4 than from 1886—89. Although I painfully remember the non-payments of subscriptions during the latter period was attributed by *some* to the manner they were asked for (see p. 23 and 25 of Proceedings for 1890), but the result of the last four years has softened the pang such a suggestion caused at the time.

The most astonishing statistic is that during 1886—89 there was a total of 1,206 members, and only 1,205 from 1891—4, but it is gratifying to find there were 27 more new members joined during the latter period, although four more withdrew their names and four more have died during the last four years, and it is still more gratifying to know that eight less have been struck off the list of members for non-payment of their subscriptions.

On the whole, however, the Association seems to be in a more flourishing condition of late years, because there are 34 more members in 1895 (viz., 310), than there were in 1890 (viz., 276), also these members seem to attend the general meetings better, as there have been 54 more present from 1891—94 than there were from 1886—89, but this paucity of interest due as was so tellingly alleged at the memorable meeting in London, 1889, when a member "expressed himself averse to the way Mr. Banham had conducted the business of the Society for the last year or two," and that "after seven years they ought to show a vigorous growth, and, looking at their present meeting, he could not help thinking there was something wrong, and the sooner a remedy was applied the better." Now, what was this "something wrong" at that time? Perhaps one can now dispassionately answer it: probably to the disquietude and restlessness of the profession at that time, and to the so-called "Obstructionists" being opposed by the so-called "Progressionists," who turned out to be successful in obtaining the fruits of others' work to their own aggrandisement (there is nothing like success, however obtained); but, on looking at the above table, can we say that they, with the very able assistance of an agreeable, enthusiastic, and impartial secretary (and I say this in all sincerity, as I believe he possesses all these attributes, and, what is more, knows perfectly well how and when to apply them, in fact, has "tact"), and who has tried his very best—and that is not saying a little—to improve the Association, for which we should like to see him made a Life Vice-President; but with all the good-fellowship, genuine assistance, and unity of purpose—which an outsider like myself may presume has existed during the last four or five years—we are rather astonished—perhaps more so than those "fault-finders" could possibly have been in 1889—at the little stride such efforts have made, and the small growth that has taken place in the Association since 1890; and we venture to think that even those who found fault in 1889 will now admit that the efforts of seven years previous to that period were not so very unsuccessful nor so detrimental to the welfare of the Association as they tried to make out, when everything is taken into consideration.

For instance:—Formerly

1. The difficulties we had in starting the Association and of exciting any enthusiasm except in the few.

2. The opposition and jealousy which seemed occasionally to show itself.
3. The apparent incompleteness of the rules under which we worked.
4. The state of the profession generally and the apathy which existed.
5. The apparent unpopularity of some of the subjects chosen for discussion.
6. The unfortunate friction sometimes in selecting officers and the places for holding the meetings.

Latterly:

1. The easy manner the Association, in good working order, was gained and the withdrawal of all apparent opposition.
2. The facilities afforded them for conducting the work.
3. The assistance which has been willingly rendered.
4. The popularity of the subjects chosen for discussion.
5. The respect and esteem in which the officers were held.
6. Absence of friction in the appointment of officers or in selecting places for the meetings.

And lastly, but not least of all, is the interest the profession now appears to take in its own welfare.

"*Tout le monde est sage apres coup.*"

I am, Sir, yours faithfully,

GEO. A. BANHAM, F.R.C.V.S.

September 23rd, 1895.

To the Editor of the VETERINARY JOURNAL.

DEAR SIR,—I beg to enclose an advertisement which recently appeared in a Fifeshire journal. What does it mean? As far as I can judge, it means this: that a man who buys a practice should guard his interests in every possible way. Veterinary ethics, in this instance, seem to be nowhere. *Caveat Emptor.*—Yours truly,

HONOUR.

W. D. FAIRBAIRN, M.R.C.V.S.,
Veterinary Surgeon,
8, NORTH BELL STREET,
ST. ANDREWS.

NOTICE.

NOTICE IS HEREBY GIVEN,—That Mr. W. D. FAIRBAIRN, Veterinary Surgeon, who announces that he is to Commence Practice of his Profession in St. Andrews, Sold to me, at a Substantial Price, the GOODWILL of his Practice in Cupar and District, extending to St. Andrews, in October, 1892.

Cupar, 4th September, 1895. ROBT. REID, M.R.C.V.S.

EDITORIAL NOTE.

Just before going to press, we have received the Report of the Bombay Veterinary College, for the year 1894-95, which we will notice in next month's issue.

Communications, Books, Journals, etc., Received.

Annual announcement of the Ontario Veterinary College; "Cape Colony Agricultural Journal;" "Mark Lane Express;" "Veterinarian;" Annual Report of the Army Veterinary Department; Tuberculosis among Cattle, by Shumway; "Brisbane Evening Observer;" "Farming World;" "The University Correspondent;" Berliner Thierärztliche Wochenschrift; T. Spence Smith, Esq., M.R.C.V.S.; "O;" Catalogue of the Millfield-Polment Hackney Sale, October 1st.; Catalogue of The Londonderry Stud, Seaham Harbour; "Cape Colony Agricultural Journal;" "The Journal of Pathology and Bacteriology;" "The Journal of Comparative Medicine and Veterinary Archives," Philadelphia; "Land and Water" "Lancet;" "To-day;" Recueil de Médecine Vétérinaire (Alfort); La Presse Vétérinaire (Paris); Annales de Médicine Véterinaire (Brussels); L'Echo Vétérinaire (Liége).